NETWORK WORLD
The Newsweekly of User Networking Strategies
Volume 7, Number 48
An International Data Group Publication
November 26, 1990

FEATURE

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User Excellence Awards honor innovative firms

1990's top winners: American Airlines Decision Technologies, First National Bank of Maryland

SIXTH ANNUAL
User
Excellence
Awards

In many ways, networking is an art. But it's not art for art's sake. The mark of excellence in networking is a strategic advantage, an edge in efficiency or the ability to do something new in business.

The human elements required to build an outstanding net are insight, courage, prudence, innovation and energy, as well as a great deal of dedication and hard work. Users demonstrating these qualities deserve recognition.

For this reason, *Network World* each year presents the User Excellence Awards.

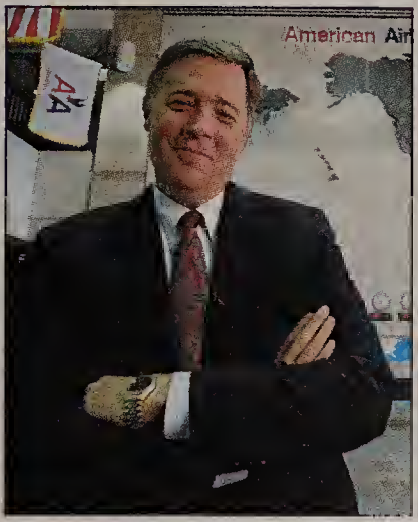
Eligibility isn't limited to big corporations or large networks. The awards are based on an organization's innovative use of networking technology in the pursuit of strategic goals.

We look for leaders. And the seven organizations that are this year's winners are indeed leaders. This year's two cowinners, American Airlines Decision Technologies, Inc. of Dallas and First National Bank of Maryland in Baltimore, have crafted network innovations that significantly benefited their organizations.

First National's networking team puts money in the bank.

American is installing new software and networked hardware that bring its reservation system into the era of local-area networks and simplify operations. First Maryland's backbone, based on privately owned and leased carrier facilities, provides significant savings on local voice and data connectivity and will speed availability of new banking services.

The five honorable mentions were cited for such things as innovative LAN-based applications, extensive satellite networks and wide-area networks linking diverse LANs.


American's Thomas Cook leads a technology revolution.

Articles about the winners and honorable mentions appear in special features beginning on pages 34, 38 and 41.

Network World will hold a presentation ceremony for the winners on Jan. 30 at the Washington Convention Center during the Communication Networks '91 Conference and Exhibition.

Honorable mentions
The rest of the best

Allegheny Ludlum Corp.'s #9 Maintenance Division of Brackenridge, Pa.

□

American Management Systems, Inc. of Arlington, Va.

□

Edward D. Jones & Co. of Maryland Heights, Mo.

□

K mart Corp. of Troy, Mich.

□

The University of California, San Diego

Enterprise net vision takes shape at Boeing

Companywide backbone will connect users on proprietary nets, as well as customers, suppliers.

By Ellen Messmer
Washington Correspondent

SEATTLE — Top network architects at The Boeing Co. last week said the firm has embarked on an ambitious project to link its disparate in-house networks via an Open Systems Interconnection backbone.

The executives said the Boeing Enterprise Network — which could take up to five years to implement — is designed to let any user access any processor on the net and will facilitate communications among departments, subcontractors and customers.

"The goal is to get any system to share information independent of the computer manufacturer or the computer location," said Laurie Bride, manager of network architecture at Boeing Computer Services and a member of *Network World's* User Advisory Panel.

While roughly 20,000 nodes, including workstations and mainframes, are supported on the company's different networks today, Boeing plans to support as many as 100,000 nodes on its Boeing Enterprise Network by the mid-1990s, Bride said.

The Boeing Enterprise Network has been in development since 1987 and was completed as an architecture document in late 1989, Bride said. Earlier this month, the company began installing equipment at some sites to support the project.

Everett Rigsbee III, senior network systems architect in the standards and strategic planning group of Boeing Network Services, said proprietary nets have become a barrier to interdepartmental communications.

"Decisions to buy proprietary systems have come back to haunt us," he said.

Consequently, the company

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Users launch late protest to price caps

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Major user groups last week made an eleventh-hour effort to derail the FCC's price cap plan for local carriers, scheduled to take effect Jan. 1.

The International Communications Association (ICA), the Ad Hoc Telecommunications Users Committee, the Tele-Communications Association, Inc. (TCA) and several other parties filed petitions asking the Federal Communications Commission to reconsider its September order instituting price caps for local carriers.

Echoing concerns voiced throughout the fractious price cap proceeding, the groups said they fear the plan would give the carriers too much pricing flexibility, cost users money and lead to deteriorating service quality.

Opponents of the plan claim users haven't benefited under AT&T's price caps and warn that applying the new rules to the monopolistic local carriers could be disastrous.

The FCC mandated compliance with price caps for GTE Telephone Operations and the seven regional Bell holding companies.

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NETLINE

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ALUMNI GROUP issues $1b RFP for long distance. Page 2.

NET MANAGERS MUST ACT to close the credibility gap with upper management. Page 2.

FIDELITY INVESTS IN nationwide TCP/IP backbone that gives PC users access to any host. Page 2.

DEC DEPOSITS NEW software, services to help banks build branch networks. Page 4.

NW ADVISORY PANEL SPLIT on how a recession would affect networking plans. Page 4.

DIGITAL LINK'S NEW T-3 DSU/mux concentrates data onto one line. Page 4.

NEWSPAPER

Carriers take diverse roads to switched data services

By Bob Wallace
Senior Editor

Although the Big Three long-distance carriers are gearing up to offer switched T-1 and T-3 services as early as mid-1991, they have divergent implementation plans that will affect service delivery and availability.

Of the three, only AT&T can support switched T-1 services on its existing central office switches. MCI Communications Corp. and US Sprint Communications Co. must upgrade their Northern Telecom, Inc. and Digital Switch Corp. (DSC) switches or install new hardware before they can support the offerings.

Until recently, it appeared that AT&T's rivals had few options for delivering switched services. But the recent introduction of Adaptive Corp.'s T-3 switch and Northern Telecom's announcement last week of a central office-based system that enables existing machines to support high-speed switched services hold promise.

The new Northern Telecom product, the Enhanced Network (Enet) system, is a 6-ft.-tall, freestanding cabinet containing a nonblocking switching matrix

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Alumni group issues RFP for long-distance services

Council for Alumni Association Executives seeks bulk buying plan, calling discounts for members.

By Bob Wallace
Senior Editor

LOS ANGELES — A group representing alumni of over 100 colleges and universities last week issued a $1 billion request for proposal for business and residential long-distance services.

Formed in 1989 to ease communications between schools and their alumni across the nation, the nine-person Telecommunications Committee for the Council for Alumni Association Executives (CAAE) created the RFP on behalf of 97 alumni associations representing eight million end users.

The 50-page RFP, issued to AT&T, MCI Communications Corp., US Sprint Communications Co., regional carriers and long-distance aggregators is essentially a bulk buying plan that would enable CAAE to turn around and offer alumni discounted offerings such as WATS, 800 and calling card services.

AT&T, MCI and US Sprint each offer special programs designed for these groups. Discounts are awarded based on the combined usage of participating members. The $1 billion figure assumes 100% participation in the program and per-member long-haul spending of $10 a month.

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Net execs lacking business savvy face credibility gap

Net managers must tie net goals to business plan.

By Wayne Eckerson
Senior Editor

Many network managers lack credibility in their organizations and continue to play a limited role in shaping corporate strategy despite their companies' increasing reliance on network technology.

That's according to top business leaders and management consultants who contend that network managers lack basic business skills and seem more committed to their careers as technologists than to their companies.

But network managers can close the credibility gap, observers say, by tightening their grip on costs and devoting more time to developing three- to five-year strategic plans that forecast network expenditures and detail the corporate benefits of technology investments.

Managers can also gain credibility by gaining a better understanding of end-user needs and learning to communicate how technology can further their company's strategic objectives in terms that senior executives can understand.

"Network managers have to start acting as businesspeople who are keyed in to their firm's long-term strategic direction, rather than technologists," said

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Fidelity builds nationwide TCP/IP backbone network

By Paul Desmond
Senior Editor

BOSTON — Fidelity Investments, Inc. has constructed a nationwide TCP/IP backbone to give its personal computer and workstation users access to a variety of host systems over a single wire.

Using Transmission Control Protocol/Internet Protocol on the new Fidelity Data Distribution Network (FDDN) means Fidelity will only have to support a single backbone protocol, obviating the need for parallel backbone nets dedicated to different vendors' machines.

"If we didn't come up with a standard strategy for a single backbone protocol, it was going to be about five or six different networks," said Frank Diasparra, vice-president of advanced technology for Fidelity Systems Co., which is building the FDDN.

Fidelity is a mutual funds investment company with numerous divisions, each of which has been given the freedom to choose the computing platform that best meets its needs, according to William Maybaum, a Fidelity Systems vice-president. The company has historically been an IBM 3090 MVS shop, but over the years, a number of new applications have surfaced on different platforms.

For example, Stratus Comput-

(continued on page 71)

Briefs

Centrex users honor Network World. At its recent annual meeting in San Diego, the National Centrex Users Group (NCUG) honored *Network World* Senior Editor Bob Wallace for his continued support of the organization, which represents more than 750 member companies that use Centrex services. Wallace has reported on the user group since its inception in November 1987.

"NCUG has always been foremost a community of individuals, users and vendors with a common interest. The NCUG board would like to recognize special individuals who have supported the group since the beginning," said Jim Yeip in bestowing the award, which was the first of its kind given by NCUG. Yeip is NCUG vice-president of membership and a telecommunications analyst with Federal Mogul Corp. of Southfield, Mich.

FDDI management addressed. The ANSI X3T9.5 Fiber Distributed Data Interface committee will debate at its next meeting whether to make Parameter Management Frames (PMF) a mandatory component of the FDDI station management standard. PMFs, which are currently an optional station management component, define a method for remotely retrieving station management data. If PMFs become mandatory, they would assure that users could manage all of their FDDI end stations, regardless of the manufacturer of their FDDI equipment. The X3T9.5 committee will meet Dec. 3 to 7 at the Hyatt Hotel in San Jose, Calif.

Motorola seeks Iridium frequencies. Motorola, Inc. will ask the Federal Communications Commission to push for an international spectrum allocation for a low-orbit earth satellite service in the 1.46- to 1.53-GHz range at the upcoming World Administrative Radio Conference '92 next month. Motorola wants to use the frequencies for its proposed 77-satellite Iridium system, which would provide mobile voice and data services. The spectrum is also sought by advocates of another new technology — digital audio radio services. The 1.46- to 1.52-GHz range is now occupied by members of the Aerospace and Flight Test Radio Coordinating Council.

Frame relay for more than LANs. StrataCom, Inc. and Sync Research, Inc. last week announced they have successfully completed compatibility testing of a frame relay interface between StrataCom's IPX FastPacket T-1 multiplexer and Sync's Frame Relay Network Access Controller (NAC). The Frame Relay NAC is a multiprotocol packet assembler/disassembler that lets users attach disparate devices such as IBM cluster controllers, automated teller machines and various asynchronous devices to a single frame relay link. Its compatibility with the IPX brings the speed and routing benefits of frame relay to applications other than local-area interconnection, the application for which frame relay is most often touted.

AT&T to launch new birds. AT&T and General Dynamics Corp.'s Space Systems Division last week announced that General Dynamics will launch two AT&T Telstar 4 communications satellites in 1993 and 1994. The satellites will operate in both C- and Ku-band radio frequencies for applications including very small aperture terminal communications, satellite news-gathering and business television.

Time-stamp your documents. Two Bell Communications Research engineers have filed patents for cryptographic software that can be used to time-stamp electronic documents, including text, data, digitized audio, video and photography records. The software can be used to verify the authenticity of business records, expose retouching of digital photographs and help resolve patent disputes about the timing of inventions.

The time-stamping software will generate a single line of code that can be used to prove a document was created on or before a certain date and that it was not altered after that date. The code consists of a random string of numbers generated by an algorithm that provides tamperproof physical representation of the submitted document. Bellcore is currently developing a prototype of the software to time-stamp its own records, researchers said.

He's making a fax, checking it twice. Faxnet, a provider of facsimile equipment and services, last week announced SantaFax, a free service for children who want to write to Santa Claus. Unlike mailed letters to the jolly old man, SantaFax will give children a response the next day. For more information about SantaFax, call (201) 562-1877.

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See The FAXNeT Form on Page 45

DEC offerings help banks construct branch networks

Firm offers new software, consulting services.

By Jim Brown
Senior Editor

NEW YORK — Digital Equipment Corp. last week announced new software and consulting services designed to help banks build branch office networks.

With DECbank-Branch, banks can build "platform automation networks," which enable bank personnel to electronically open new accounts, merge information from different data bases to answer customer questions quickly and use microcomputer- or server-based applications to create customized savings and loan programs.

VAX incentive

DECbank-Branch is aimed at convincing bankers to install DEC VAXes on branch office Ethernets as servers providing application and file sharing services to local microcomputers and terminals.

The VAX servers would also provide connections to home office hosts and information service providers such as credit reporting bureaus.

Ameritrust Corp. of Cleveland is currently building a network using a customized version of DECbank-Branch (see "Ameritrust banking on distributed net," page 19).

DECbank-Branch, which runs on VMS-based VAXes and can be accessed by microcomputers running client software or directly attached terminals. It includes a host of application program interfaces (API) that enable the VAX to support DEC's and other vendors' banking applications.

For instance, DECbank-Branch lets users employ a common user interface to select applications and swap data among them. The offering also includes APIs that enable server-based applications to detect requests for host-resident data, establish a wide-area connection to the host and transparently download the necessary data.

DECbank-Branch software can be compared to DEC's popular All-In-1 software, an office automation package including word processing, spreadsheet and electronic mail applications, according to Bob Russell, DEC's vice-president of field engineering for service industries. All-In-1 uses the same approach as DECbank-Branch in providing a common user interface to launch applications and a common way for applications to share data.

DEC said DECbank-Branch APIs enable applications to use a mix of networking protocols, including DECnet. APIs are also provided to allow DECbank-Branch applications to use existing DEC software products such as VMS/Systems Network Architecture, which links VAXes to IBM mainframes.

Russell said DEC will work with customers to build support for nearly any protocol into DECbank-Branch applications.

"It's going to be pretty much a function of what the customer wants to do," he said. "A lot of information systems people choose to go with whatever protocols they have used in the past. You

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Combo DSU/mux merges data traffic onto T-3 line

By Paul Desmond
Senior Editor

SUNNYVALE, Calif. — Digital Link Corp. last week announced a combination T-3 data service unit (DSU)/multiplexer that can concentrate data from multiple sources onto a single 45M bit/sec T-3 line.

The product is an alternative to intelligent T-3 multiplexers for users that want to concentrate large quantities of data at a single site and pass it to a central office over a single T-3 access line.

The DL3000 Digital Service Multiplexer is Digital Link's first DSU for the T-3 market. The company previously offered T-1 DSU/channel service unit products, some of which also included multiplexing capabilities, said Tac Berry, vice-president of marketing for Digital Link.

Jeff Held, principal at Ernst & Young's Network Strategies, a consultancy in Fairfax, Va., said it makes more sense in some instances to use a DL3000 instead of a full-featured T-3 switch like the one unveiled last month by Adaptive Corp., a Network Equipment Technologies, Inc. spin-off ("Firm unveils SONET-based T-3 switch," *NW*, Nov. 5).

Held said one of the biggest markets for T-3 will be as access facilities to carrier networks. "There are a lot of users who, even though they don't have enough [traffic] to justify a nationwide T-3 network, may have selected locations where they have the kind of traffic [needed to justify T-3 access links]," he said.

The DL3000 supports as many as eight T-3 trunks, each of which takes up one of 15 available interface module slots, Berry said.

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User panel weighs impact of recession on net plans

By Maureen Molloy
Staff Writer

Members of *Network World's* User Advisory Panel agree that a recession is on the way, but they're divided on how the declining economy will affect their network strategies.

Some members said an economic downturn would force them to delay planned net projects. Others, however, claimed a recession would actually bolster the importance of networking as a way to cut costs and stay competitive in a sluggish market.

The User Advisory Panel comprises top network executives from companies in a range of industries, as well as representatives of leading user groups.

Stanley Welland, manager of corporate telecommunications and information technology at General Electric Co., said the next few years will be difficult ones for businesses, but GE will leverage network technology to weather the impending recession.

"A recession is not the time to chop the network budget but to expand it," Welland said. "It's an inverse relationship. When times get tough, smart companies will make better use of their networks to save on costs."

Welland, who's already seen an increase in GE's use of network facilities, expects that use to explode during the next few years.

"There is now much greater use of videoconferencing to save on travel costs, and E-mail and fax services are being used more than ever before," he said.

Thomas Festa, president of the Wall Street Telecommunications Association, concurred.

"When things were booming on Wall Street, no one wanted to hear about the newest technology," Festa said. "Now that times are anything but good, everyone's willing to listen to what the [network] manager has to say. A recession is the best time to show the company all the cost savings brought on by technology."

Festa said smart companies will find ways, to apply technology to help them through the recession. One of the more popular moves made by Wall Street companies in their efforts to reduce costs has been to switch from private networks to virtual private network services.

But other members of the panel contend that bleak economic conditions are already hurting their network efforts.

Ron Kopitowsky, director of telecommunications for New York's Metropolitan Transportation Authority (MTA) and president of the Communications Managers Association, said the MTA has already been hit hard by changing economic conditions and some planned projects will be put on hold.

He said the stock market crash of 1987 resulted in the loss of jobs for thousands of New Yorkers, leading to reduced ridership of public transportation and a decline in revenue for the MTA.

"Our revenue is way off, and we've revised our budget three times so far this year," Kopitowsky said. "Network projects that have already been OK'd will continue, but those that haven't been committed to yet will roll out more slowly, if at all."

Len Evenchik, communications director for the Commonwealth of Massachusetts' Office of Technology Planning, agreed. He said a downturn in Massachusetts' economy is forcing him to be more judicious in prioritizing network projects.

Lean times

"There's no question we're in a recession," Evenchik said. "The only thing that's uncertain is how long it will last. Times are lean so I'm focusing on a short list of 'must dos' because, despite the recession, you still have to move forward and produce results."

Phillip Evans, director of telecommunications for FMC Corp. in Dallas, said his company fears a recession may be in the offing and is closely eyeing expenditures in each department.

"I've been reevaluating projects to see if they can be scaled down or delayed without causing significant harm," Evans said. "It's a wait-and-see thing. Right now we're continuing with our plans, but that doesn't mean we'll be able to execute them."

US Sprint offers FON Card users 3-way conferencing

New service doesn't require operator assistance.

By Anita Taff
Washington Bureau Chief

KANSAS CITY, Mo. — US Sprint Communications Co. introduced a new voice conferencing service last week that enables its FON Card customers to add a third party to an ongoing conversation.

The service, Sprint QuickConference, can be accessed from any push-button phone, including cellular phones, and does not require operator assistance.

For the next three months, US Sprint will offer the bridging feature free of charge; customers will pay only the toll charges associated with the two calls. After the three-month promotion, users will pay 75 cents each time they utilize the feature.

The QuickConference service will be available to the 14 million business and residential users of FON Card, said Don Goldman, director of messaging and operator services at US Sprint.

A typical user of the service would be a sales representative who is out of the office in the middle of a call with a customer and needs to bring a colleague into the conversation to get additional information. With other carriers' offerings, including US Sprint's Conference Line service, the representative would have to hang up and dial an operator to establish a three-way conference call, Goldman said.

"If you have someone on the phone and you hang up with them and say, 'I'll call you back in a few minutes,' maybe you'll get them and maybe you won't," he said.

QuickConference can also be used by residential users as an alternative to offerings from the regional Bell holding companies, which allow three-way conferencing but often carry a monthly charge, Goldman said.

In order to use the FON Card three-way feature, callers place the first person on hold by dialing the star key and 12. They then dial the third person, and when that person is on line, they dial the star key and 13 to bridge the calls. Charges for the service appear on a user's monthly bill under FON Card calls.

Goldman said the new service rounds out US Sprint's conference offerings, which also include Sprint Conference Line, an operator-assisted voice conferencing service that supports from four to 100 people, and the Sprint Meeting Channel, a videoconferencing service.

Spurred on by the economic downturn, US Sprint plans to make a push in the conferencing area in the next few months.

Clarification: The story "U.S. Robotics introduces V.32bis-compatible modem" (*NW*, Nov. 12) stated that users could exchange any modem and $545 for U.S. Robotics, Inc.'s 14.4K bit/sec Courier V.32bis modem. The firm will only accept 9.6K bit/sec modems along with $545 as a trade-in.

When ROLM sent John Axselle back to school, he asked questions that got a whole campus talking.

When ROLM® sales rep John Axselle arrived at Virginia Tech, he knew he was in for a lot of homework.

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Soon, students were able to access library research materials from personal computers in their dorm rooms. Professors and students alike were conducting electronic bull sessions with their counterparts around campus and around the world. And one day, students will be able to take a morning class at the Sorbonne and attend an afternoon lecture at Oxford. All without leaving campus. And all thanks to the ROLM 9751.

Could John Axselle have sold a system without all of his questions? Probably. It's done every day. Could he have helped design a system specifically matched to the campus-wide needs of Virginia Tech? Definitely not. And that's a lesson that shouldn't be lost on you the next time you're considering a telecommunications company.

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Airline expects new network will bring quick return on investment

By Barton Crockett
Senior Editor

ST. PAUL, Minn. — Northwest Airlines, Inc. is nearing completion of a multimillion-dollar image processing net that is expected to pay for itself within a year.

The Passenger Revenue Accounting (PRA) system will enable Northwest Airlines to audit prices and commissions on ticket sales and flight boarding records, vastly improving a manual system whereby only a fraction of those figures were checked.

Northwest has projected that installation will cost tens of millions of dollars, but the system should pay for itself in six months to a year by improving financial controls and increasing the accuracy of information used to schedule flights. The company declined to provide more specific cost figures.

"Early indications are that we are going to see the benefits we counted on," said Rusty Owen, Northwest's director of passenger revenue accounting.

Northwest began running PRA on a limited scale earlier this year and already has 85% of the PRA applications up and running. The rest of the applications will be installed by the first quarter of next year, according to Scott Grengf, Northwest's project leader for the technical team implementing PRA.

In PRA, Northwest is deploying about 420 Sun Microsystems, Inc. diskless workstations hooked via Ethernet into 21 Sun servers. These servers are linked via SynOptics Communications, Inc. bridges to a single SynOptics 3000 Ethernet concentrator, the backplane of which acts as an Ethernet backbone.

The SynOptics concentrator supports another 12 Sun file servers that house and run the software and data bases used to operate PRA.

The concentrator is also linked via bridges to two Optical Storage and Retrieval (OSAR) 200 optical disk management systems from FileNet Corp. in Costa Mesa, Calif.

Each OSAR 200 consists of an optical jukebox capable of storing as many as 204 optical disks, as well as customized processors and magnetic storage devices.

A fiber-optic channel extender from Network Systems, Inc. is used to shuttle data from the PRA concentrator to mainframes in Northwest's main data center two miles away.

PRA improves Northwest's ticket-tracking capabilities by eliminating the need to manually wade through the approximately 300,000 ticket boarding coupons, receipts and seating lists that flow through the airline's passenger revenue accounting center here every day.

Previously, employees had to physically gather, collate and check separate paper copies of seating lists, ticket receipts and boarding coupons to ensure that billings were accurate and to verify the number of passengers on flights. The sheer volume of paper made this chore exceedingly difficult, Owen said.

As a result, Northwest could only examine 5% of all paper documents coming into the accounting department at the Minneapolis/St. Paul airport, Owen said. The airline used this sampling to estimate actual billings and flight boardings.

With PRA, each ticketing transaction and flight boarding record is examined via computer, improving financial accounting and record-keeping, Grengf explained.

AI application

As paper documents arrive, they are scanned into optical disks using an optical scanner that can process as many as 17 documents per second. Each optical disk can store about 2.6G bytes of data, or images of roughly 100,000 tickets. Throughout the day, optical disks are manually loaded from scanners into OSAR 200 jukeboxes.

Each night, custom-designed artificial intelligence-based software sorts through all of the images loaded into the FileNet optical library and sends verified transactions through the net into the remote mainframes.

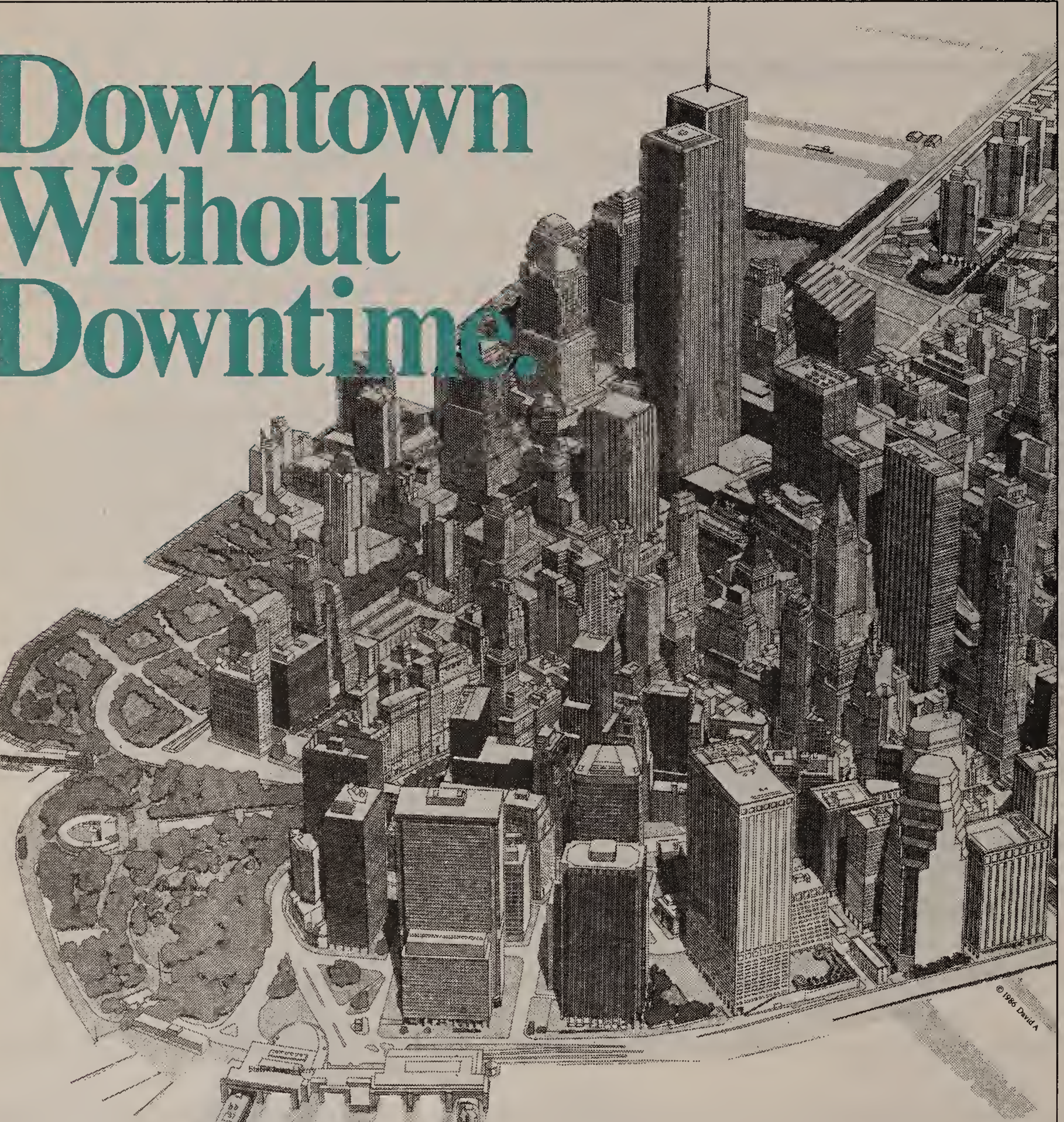
Transactions that can't be verified because of errors are automatically arranged into batches and examined the next day by Northwest employees working on diskless Sun workstations.

In many instances, employees verify and correct transactions by pulling down document images via the local net from the FileNet OSAR system.

Most images that must be viewed are automatically preloaded from the optical jukeboxes into adjacent magnetic storage devices. This speeds network response, since it can take as many as 30 seconds to pull down a document image from the jukebox. Jukeboxes are slow because a mechanical arm must lift the optical disk from a rack and place it in a disk drive.

Surprisingly, image traffic has not posed much of a burden on network performance, Grengf said. In part, this is because most of the images are compressed to consume only between 23K and 27K bytes of data.

As a result, Grengf said, PRA has only consumed about 15% of the Ethernet backbone's 10M bit/sec capacity. He added that this backbone could easily be upgraded to 100M bit/sec Fiber Distributed Data Interface. ☑



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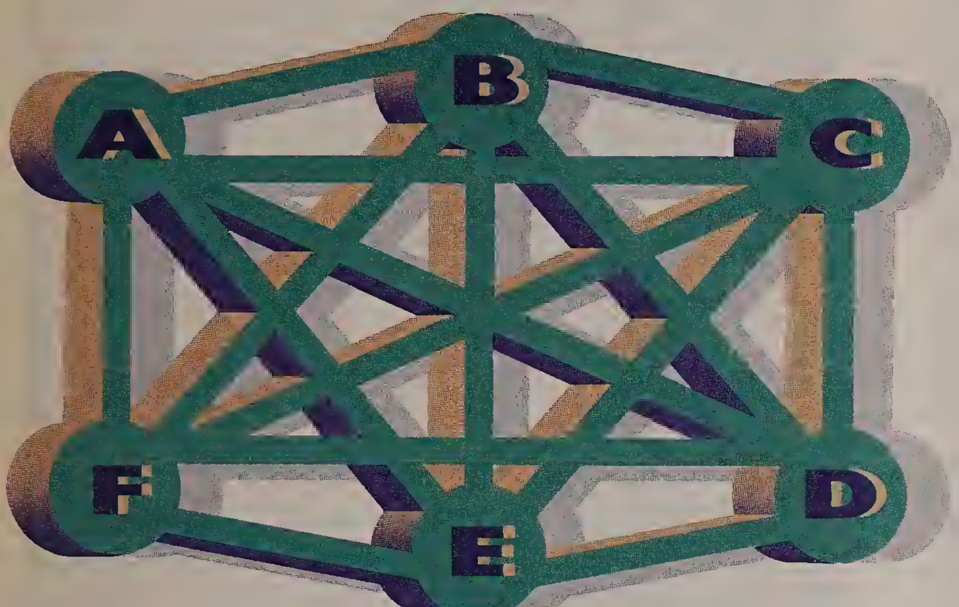
Traditional LAN Internetwork



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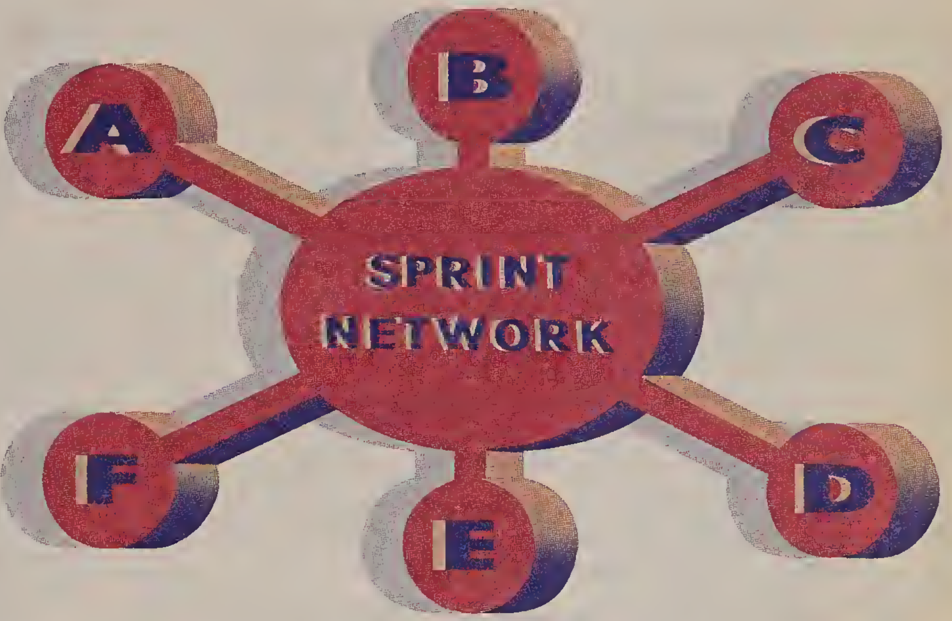
SprintNet LAN Reach X.25



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UP TILL NOW, the conventional way to build a LAN internetwork was to use private lines. And to connect each LAN to every other LAN or host. The management issues were a nightmare. And the costs were even worse. Which is why most people only connected a few of their LANs. Or none at all.

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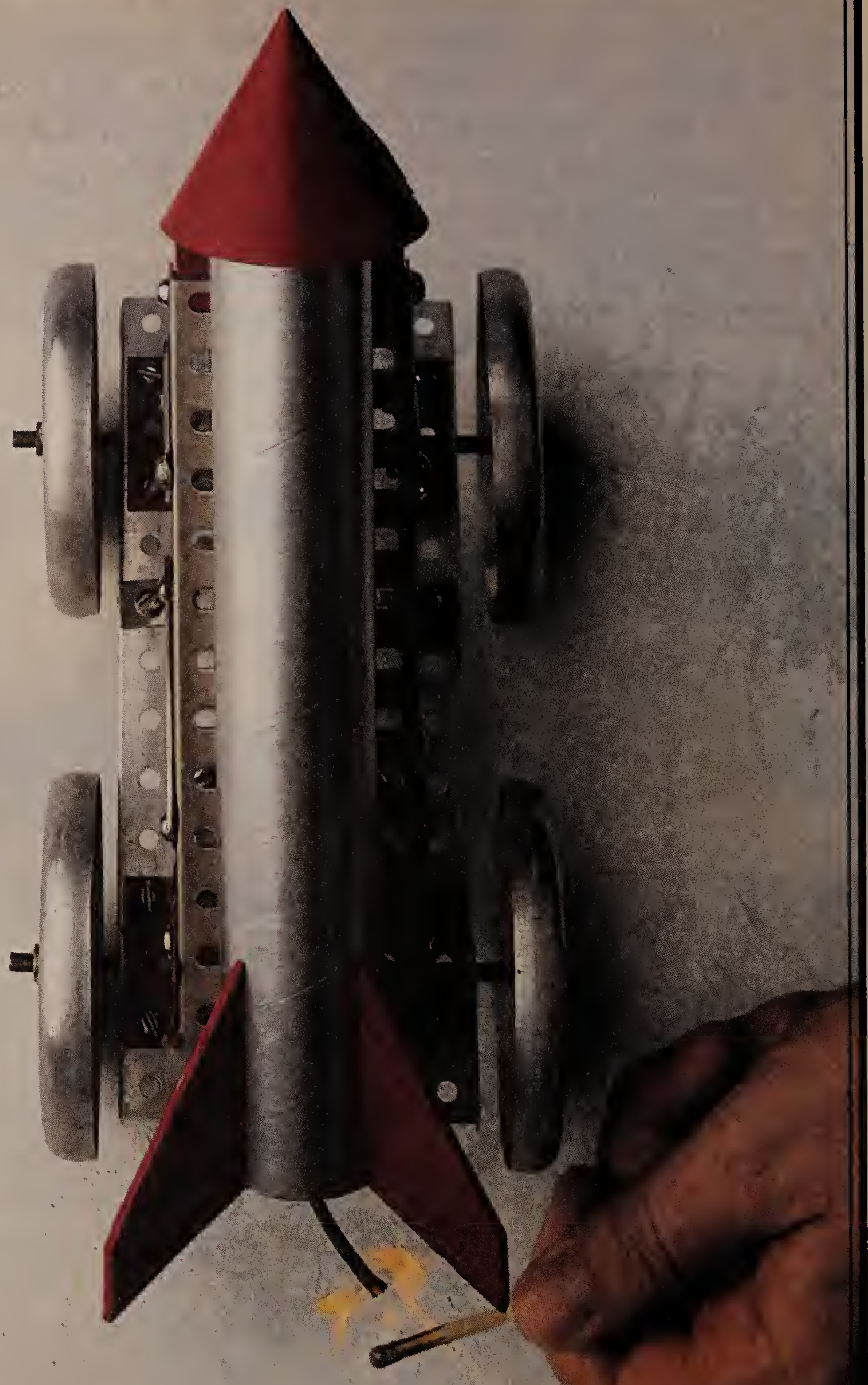
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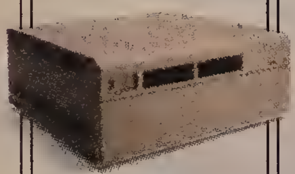
RACALAN NETEXPRESS



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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

The official word from MCI Communications Corp. last week was that the carrier could lay off up to 1,500 employees across the board as part of a major restructuring. However, sources within the company said the layoffs could number 3,000 since many employees are expected to leave rather than accept an option to relocate.

People & Positions

Banyan Systems, Inc., a Westborough, Mass., local-area network vendor, recently named **Alex Nicolson** to the newly created position of Asia/Pacific general manager.

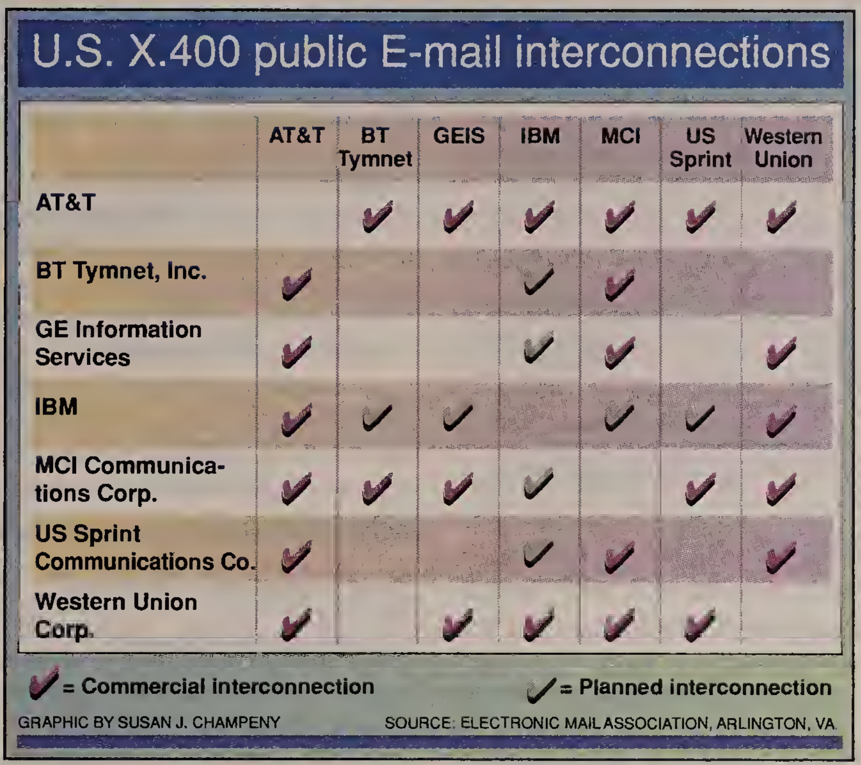
Nicolson will be responsible for sales and marketing for Asia, Australia and New Zealand. Initially, he will be based in Westborough at Banyan's headquarters and will report to **Wayne Fitzsimmons**, Banyan's vice-president of international business.

Previously, Nicolson was director of Asia/Pacific marketing at Data General Corp.

President Bush recently awarded the National Medal of Technology to **John Mayo**, an **AT&T Bell Laboratories** executive who was among nine honorees to receive the award.

Mayo, senior vice-president of Network Systems and Network Services at AT&T Bell Labs, was recognized for "providing the technological foundation for information age communications and for overseeing the conversion of the national switched telephone net from analog to [digital]."

Mayo is responsible for AT&T Bell Labs' work in electronics technology, transmission systems, switching systems, operations systems and network services.



U.S. X.400 public E-mail interconnections

	AT&T	BT Tymnet	GEIS	IBM	MCI	US Sprint	Western Union
AT&T		✔	✔	✔	✔	✔	✔
BT Tymnet, Inc.	✔			✓	✔		
GE Information Services	✔			✓	✔		✔
IBM	✔	✓	✓		✓	✓	✔
MCI Communications Corp.	✔	✔	✔	✓		✔	✔
US Sprint Communications Co.	✔			✓	✔		✔
Western Union Corp.	✔		✔	✔	✔	✔	

✔ = Commercial interconnection ✓ = Planned interconnection

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: ELECTRONIC MAIL ASSOCIATION, ARLINGTON, VA.

Report says Europe may be rich vein for telecom firms

Warns against effects of protectionist measures.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — The European Common Market that is scheduled to be finalized in 1992 will prove to be a bonanza for telecommunications equipment manufacturers and service providers, but the share that non-European vendors might capture remains to be seen.

That was one of the findings of "EuroTelecom 1992," a new report by the North American Telecommunications Association (NATA), a trade organization of companies in the customer premises equipment business.

The NATA report predicted that the European equipment market, which reached $19.9 billion in 1988, will grow to $40.5 billion by 1995. It also projected that the market for telecommunications services, which was $55 billion in 1988, will rise to $100 billion by 1995.

> Provision of services and equipment now largely remains in the grip of each PTT.
>
> ▲▲▲

But the willingness of the European Community to open its market to foreign competitors could be slowed if U.S. protectionist legislation is passed by Congress, the report warned.

The report also stated that the largest single market segment for telecom equipment will be in central offices (see graphic, page 10) and noted that the European Community's 12 post, telegraph and telephone administrations have a tendency to buy from their own national suppliers.

> The report suggests it is unlikely one regulatory policy will emerge in the near future.
>
> ▲▲▲

The report details how the communications infrastructures of the 12 Common Market countries are fragmented in terms of network modernization and regulatory policies.

Provision of services and equipment to end users now largely remains in the grip of each country's PTT.

Although the European Community's ruling body, the European Commission, has pushed through laws ordering a competitive equipment market and competition in nonvoice services across Europe by 1992, the report suggests it is unlikely that one uniform regulatory policy will emerge anytime in the near future.

In addition, some countries, such as Italy, are fighting the new laws in court.

But the report emphasized that the new competitive spirit of a unified Europe will spur mod-

(continued on page 10)

MCI reorganization bodes well for users

Carrier hopes to pare costs, free up funds for research and improve customer responsiveness.

By Bob Brown
Senior Editor

WASHINGTON, D.C. — MCI Communications Corp.'s recently announced restructuring plan brings the company in line with AT&T and US Sprint Communications Co., both of which have reorganized to improve operating efficiencies and respond faster to user demands.

By abandoning redundant divisional operations set up to parallel the geographic layout of the regional Bell holding companies, all three carriers are attempting to pare costs and free up funds for marketing and research. While cutting fat and centralizing management, the carriers are making efforts to keep product experts and account representatives in the field close to customer sites.

MCI's move — like US Sprint's restructuring unveiled this summer — may also be a signal that AT&T's renewed efforts to halt its eroding market share have been successful, industry observers said.

"For a while, AT&T was a sleeping giant," said Liza Draper, program director at Gartner Group, Inc., based here. But AT&T has woken from its sleep during the past year or so, forcing MCI and US Sprint to respond, she said.

MCI's plans, announced two weeks ago, call for the company to fold its seven regional service divisions — which have been responsible for both business and residential services — into the newly created Business Markets group, Consumer Markets unit and Network Services group. The Business Markets group will have four regional divisions.

The arrangement is similar to the structure US Sprint implemented last August. US Sprint reorganized its five National Markets units into two groups — the Business Market Group, supporting customers with long-distance usage greater than $100,000 a year, and the Consumer Services Group, which supports residential and business customers spending less than $100,000 annually. US Sprint also formed its new National Sales Division to

(continued on page 10)

INDUSTRY BRIEFS

EDS nabs trucking services pact. Electronic Data Systems Corp. (EDS) last week said it signed a 10-year, $90 million contract with Cummins Cash and Information Services, Inc. (CCIS) to run the Cummins Engine, Inc. subsidiary's electronic funds transfer and truck permit services. EDS has hired CCIS personnel to run CCIS' Grand Prairie, Texas, data processing and communications center, which authorizes money transfers, state fuel permits and check cashing services to truckers through any of its 7,000 point-of-sale devices.

RBHCs seal Czech net deals. Bell Atlantic International, Inc. and US West International, Inc. recently finalized agreements with the post and telecommunications administrations of the Czech and Slovak Republics of Czechoslovakia for the construction of cellular mobile and packet data networks in that country. The RBHCs anticipate total capital investment to reach $90 million over 10 years.

HP earnings dip despite revenue gain. Hewlett-Packard Co. last week posted an 18% decline in fourth-quarter net earnings compared with the corresponding quarter last year. For the quarter, which ended Oct. 31, HP posted $202 million in net earnings, compared with $246 million for the fourth quarter of 1989. However, the company's net revenue for the fourth quarter climbed 6%, to $3.6 billion. HP attributed the earnings drop to corporate volume purchases and discounting of equipment through its dealer channels.

David to resell Retix bridges. David Systems, Inc.

(continued on page 10)

Europe may be rich vein

continued from page 9

ernization and new services for end users. In particular, Europe will be a showplace for advanced cellular services.

"Traditionally, European markets were fragmented and companies could get by with non-integrated networks," the report stated.

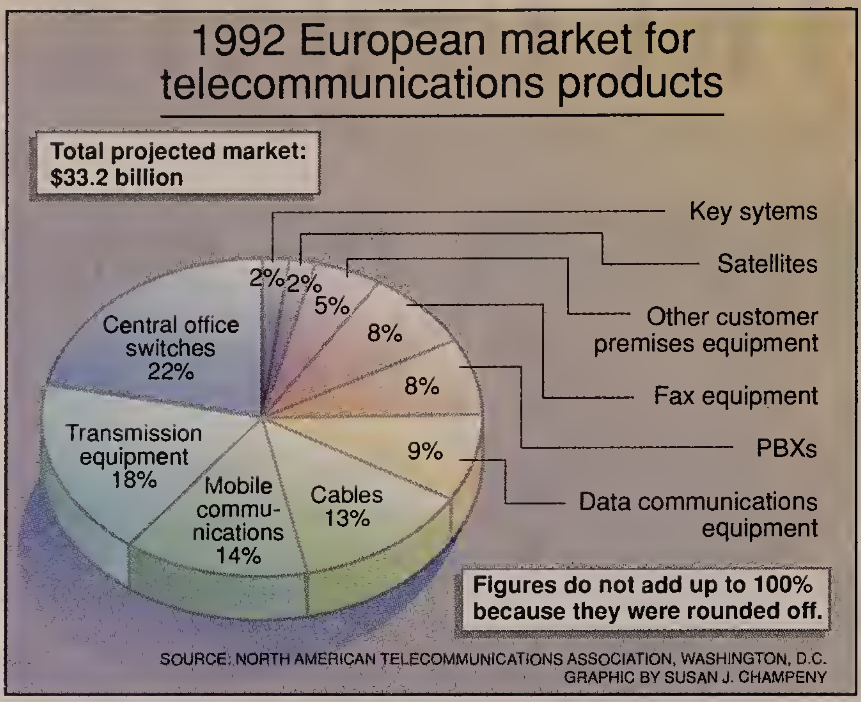
"However, unification is causing a business revolution. The [European Community] is becoming one market. It is now critical that businesses transmit huge amounts of data back and forth among offices, factories, warehouses and suppliers across national borders."

The European PTTs are expected to make huge investments to meet that demand.

And users whose companies are now rushing into Europe will be buying customer premises equipment.

The report encourages equipment suppliers to take a look at Greece, Ireland, Portugal and Spain, the countries with the most antiquated networks in Europe, where it predicts the greatest investments are likely.

Denmark and the U.K., with reputations as being the most liberal nations in the European Community, are projected to hold good opportunities for foreign suppliers of equipment and services.



SOURCE: NORTH AMERICAN TELECOMMUNICATIONS ASSOCIATION, WASHINGTON, D.C.
GRAPHIC BY SUSAN J. CHAMPENY

The unification of Germany is spurring investments in what had been East Germany. In addition, Germany has opened up competition in nonvoice services and declared an open public procurement policy allowing bidding by all international suppliers, not just European Community members.

France, which is slowly undergoing liberalization, is viewed as a tough market to crack but a good one for the sale of data equipment because its network is advanced.

Italy is seen as the least attractive because it is burdened with bureaucracy and is reluctant to comply with the order from Brussels, Belgium, to drop its stranglehold on terminal equipment sales to end users.

"Integration will happen — if not by 1992, then perhaps by 1995," the report concluded. "Whenever and however it occurs, it will be a marketplace that cannot be ignored." ◼

Reorganization bodes well

continued from page 9

target small business customers.

AT&T announced two major corporate restructurings in the past four years, the most recent of which was unveiled in March 1989. Under that scheme, AT&T organized its operations into 19 business units, 24 divisions and five operating groups. The business units, such as AT&T Paradyne, are responsible for marketing specific AT&T products.

A common strategy of the carriers is to move away from alignment with the RBHCs' geographic regions, said Bob Wilkes, a telecommunications analyst at Brown Brothers Harriman & Co., a New York investment firm.

"Being organized by RBHC regions has become redundant," Wilkes said. "Originally, the long-distance carriers organized themselves that way because they had to work closely with the RBHCs during the days of equal access and residential balloting."

Daniel Briere, president of TeleChoice, a Montclair, N.J., telecommunications consulting firm, said the carriers can afford to centralize management and scrap their RBHC-coordinated divisions thanks to improvements in network technology.

"Mimicking the RBHC regions

Industry Briefs

continued from page 9

recently announced an accord with Retix under which David Systems will market the Retix 2265 and 2265M Local LAN Bridges.

David Systems will offer the Retix products as the David ExpressWay Local Bridge Model 6215, without Simple Network Management Protocol (SNMP), and the David ExpressWay Local Bridge Model 6216, with SNMP.

The ExpressWay products are Ethernet 802.3, two-channel, media access control-layer bridges designed to increase local-area network bandwidth via intelligent traffic filtering.

According to Curt Wheeling, vice-president of marketing at David Systems, the ExpressWay Local Bridge offerings are a logical addition to the company's existing line of Ethernet LAN products.

Codex ups offerings. Codex Corp., a Mansfield, Mass., data communications equipment vendor, recently announced the

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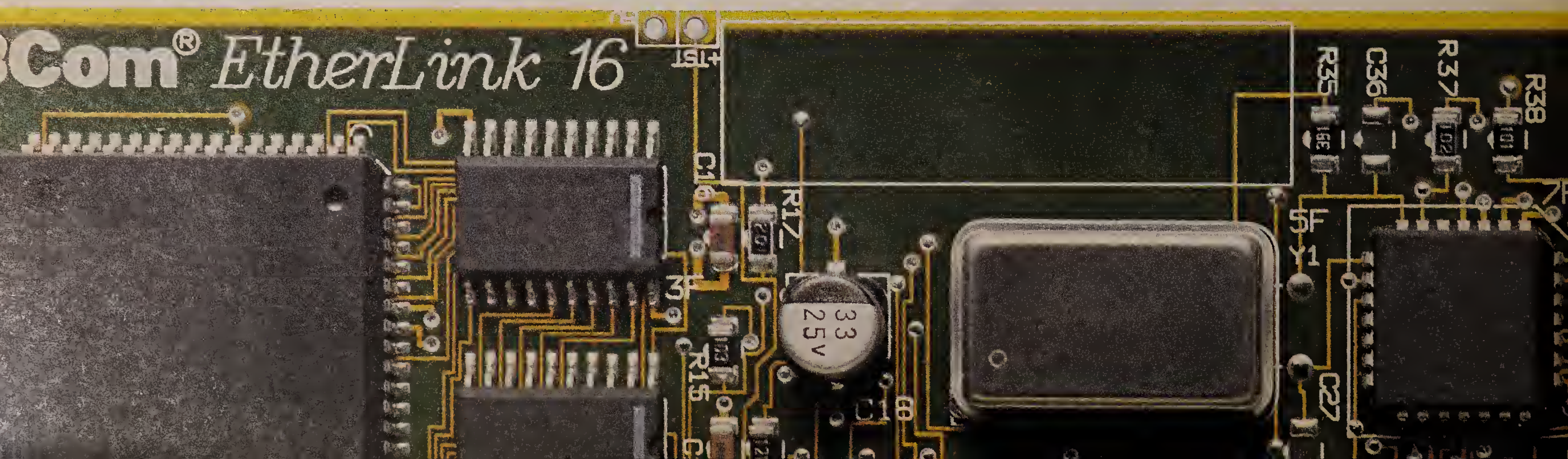

is archaic and unnecessary,'' Briere said, "especially now that the carriers have improved technology for managing networks remotely.''

The carriers are also better able to centralize their management now than they have been in the past because a growing number of small business customers are joining joint purchasing organizations, said Steve Sazegari, a telecommunications analyst at Dataquest, Inc., a San Jose, Calif., market research firm.

"The amount of time the carriers need to spend with some of these small business customers could be reduced, thanks to buying groups,'' Sazegari said. ◘

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expansion of its professional services to better meet the needs of individual customers.

The company previously offered a package of planning, implementation and support services, and negotiated the cost of the customized package with every user. Under the service packaging, customers will be able to buy more specific service offerings such as for cabling, education and network configurations. A user can then work with Codex to customize the service package. ◘

MCI to supply data services to disaster recovery firm

$20 million deal with Comdisco will enable users to access mainframes at business recovery sites.

By Ellen Messmer
Washington Correspondent

ROSEMONT, Ill. — Comdisco Disaster Recovery Services, Inc. (CDRS) recently awarded a five-year, $20 million contract to MCI Communications Corp. for data communications services.

Under the agreement, MCI will provide the major portion of data services for CDRS' private T-1 backbone net scheduled for completion by CDRS in July 1991.

The contract has a special volume pricing agreement that has not been disclosed, and the exact services MCI will provide will not be revealed until the network is completed.

The contract solidifies a strategic alliance the companies formed last spring that called for CDRS to use a number of MCI sites as business recovery facilities.

CDRS selected MCI after a competitive bidding process involving AT&T, MCI and US Sprint Communications Co., but factors other than price figured into the decision, CDRS said.

"MCI said they have zero intention of getting into [disaster recovery],'' said the CDRS spokesman, who added that AT&T and US Sprint wouldn't promise that.

> CDRS plans net redundancy through allotting about 75% of the traffic to MCI and 25% to AT&T.
>
> ▲▲▲

Last October, CDRS began building the backbone network in order to allow customers to access mainframes scattered at various CDRS centers across the country. The net comprises an unspecified number of StrataCom, Inc. IPX T-1 multiplexers and Newbridge Networks, Inc. 3600 T-1 multiplexers.

Previously, CDRS customers only had access to a mainframe at a specific CDRS recovery site, said John Sandburg, director of network design at the company. These centers, housing mainframes and other computers, are hot sites that customers use if their own centers are disabled.

The new network will allow CDRS to manipulate customer data at different centers, Sandburg said. By next July, all nine CDRS facilities, housing 25 different recovery sites, will be interlinked. Those centers are in Atlanta, Baltimore, Chicago, Dallas, Los Angeles, Philadelphia and San Francisco, and two are in northern New Jersey.

A new federal law, which goes into effect next July, is also spurring CDRS to link the formerly separate facilities. The law, instituted by the Federal Reserve Board, requires that companies electronically transferring funds in excess of $20 billion per day must show the ability to do same-day recovery by June 1991.

Continuous backup storage over the network, as opposed to the method of storing backup tapes on a daily basis, will provide much faster recovery, the CDRS spokesman said.

To allow customers to fully recover data immediately after an emergency, CDRS rolled out new continuous availability services late last year.

One new service, called remote journaling, permits an entry into a customer-site data base to be simultaneously and remotely stored at a CDRS computer via electronic transmission.

Another service, electronic vaulting, permits intermittent bulk transfer of data as a means of continous backup before disaster strikes.

The spokesman said CDRS' corporate customers are increasingly using the remote entry services.

In the future, CDRS plans network redundancy through allotting approximately 75% of the backbone traffic to MCI and 25% to AT&T. Sandburg pointed out that the close relationship developing between MCI and CDRS will allow CDRS to manipulate MCI's digital access and cross-connect systems and T-1 connections. ◘

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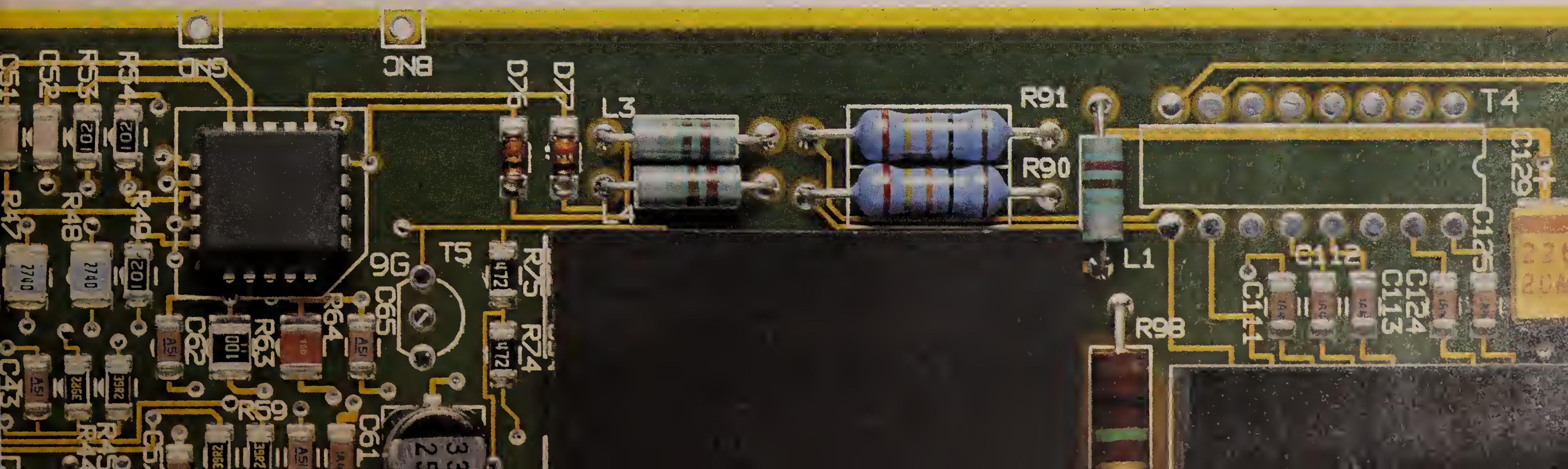

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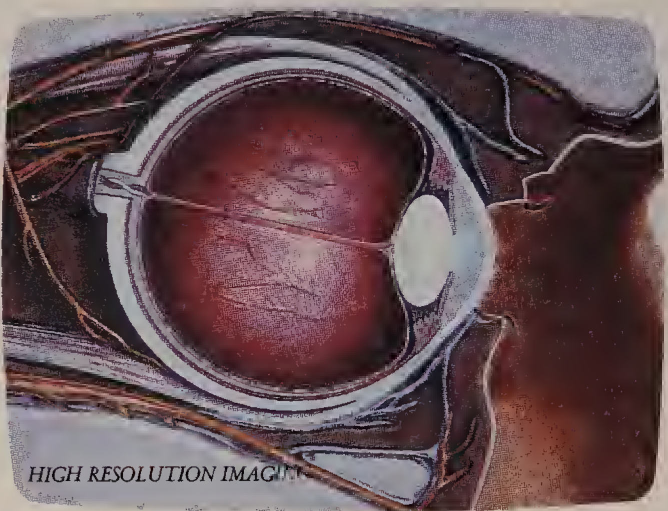

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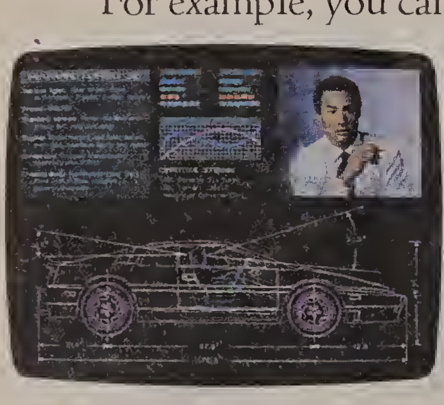

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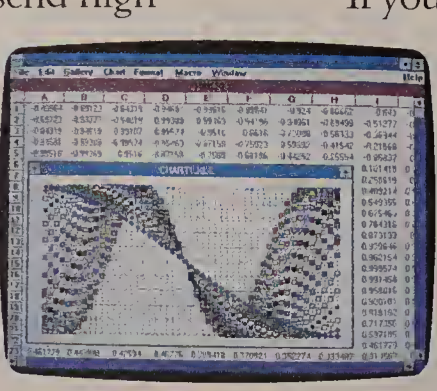

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8. ☐ Consultant (Independent)
9. ☐ Other ____________________

3 What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check one only)

1. ☐ Enterprise Wide (Organization/Subsidiary/Division)
2. ☐ Multi Enterprise (Consultants)
3. ☐ Department Wide

4 What is the total number of sites for which you have purchase influence?

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1

5 Your primary responsibility: (check one only)

1. ☐ Both Data + Voice
2. ☐ Data Networking Only
3. ☐ Voice Networking Only
4. ☐ None

6 Which transmission media do you use in your network: (check all that apply)

Public:
01. ☐ Switched-Based (DDD, Wats, Megacom, etc.)
02. ☐ Leased Line (not including T-1)
03. ☐ T-1
04. ☐ Fractional T-1
05. ☐ T-3/SONET
06. ☐ Broadband
07. ☐ ISDN

Private:
08. ☐ Satellite
09. ☐ Microwave
10. ☐ Fiber Optic

7 Is your network: (check all that apply)

LOCAL AREA NETWORK
1. ☐ Local (within building)
2. ☐ Local (in a campus environment)

WIDE AREA NETWORKS
3. ☐ International
4. ☐ National
5. ☐ Regional (several states)
6. ☐ Metropolitan

8 What is your network architecture? (check all that apply)

1. ☐ SNA
2. ☐ DECNET
3. ☐ OSI
4. ☐ GOSIP
5. ☐ MAP/TOP
6. ☐ TCP/IP
7. ☐ DCA (UNISYS)
8. ☐ OTHER ____________

9 What is your LAN Operating System? (check all that apply)

01. ☐ 3COM (3+, 3+open)
02. ☐ LOCAL TALK (APPLETALK)
03. ☐ BANYAN (VINES)
04. ☐ DCA (IRMALAN)
05. ☐ IBM (LAN Server)
06. ☐ IBM (PC LAN PROGRAM)
07. ☐ MICROSOFT (LAN MANAGER)
08. ☐ UNGERMAN BASS (NET/1)
09. ☐ NOVELL (NETWARE)
10. ☐ TOPS
11. ☐ PROTEON (PRONET)
12. ☐ OTHER ____________________

10 What is your LAN environment? (check all that apply)

1. ☐ 4M TOKEN RING
2. ☐ 18M TOKEN RING
3. ☐ ARCNET
4. ☐ ETHERNET
5. ☐ STARLAN
6. ☐ FDDI
7. ☐ LOCALTALK
8. ☐ OTHER ________

11 Which operating systems do you utilize? (check all that apply)

1. ☐ IBM DOS (VSE)
2. ☐ UNIX
3. ☐ OS/2
4. ☐ OS/2 Extended Edition
5. ☐ MVS
6. ☐ VM
7. ☐ VMS
8. ☐ XENIX
9. ☐ PICK
0. ☐ OTHER _____

12 Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAINFRAMES A	MINIS B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. BULL HN IS		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

13 Please indicate by vendor the number of microcomputers/workstations:

A. Presently installed in your network.

B. The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER/ WORKSTATION/ VENDOR	PRESENTLY INSTALLED A	PLAN TO INSTALL NEXT 12 MONTHS B
01. PCs based on 80286 chip		
02. PCs based on 80386 chip		
03. PCs based on 80486 chip		
04. 8086/8088		
05. Macintosh		
06. RISC-based workstations		
07. UNIX-based workstations		

14 What is your planned PC standard? (check all that apply)

1. ☐ EISA
2. ☐ MCA
3. ☐ NUBUS (MACINTOSH)

15 For which areas outside of the U.S. do you have purchasing influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East

16 Check ALL that apply in columns A and B

A) I am presently involved in the purchase process for the following products/services:

B) I plan to purchase the following products/services in the next 12 months:

Presently Involved A	Plan to Purchase B	
A	B	LOCAL AREA NETWORKS:
01. ☐	☐	Local Area Networks
02. ☐	☐	LAN Servers
03. ☐	☐	LAN Services
04. ☐	☐	Cables, Connectors, Baluns
05. ☐	☐	Bridges, Routers, Gateways
06. ☐	☐	UPS
07. ☐	☐	LAN Storage Devices
A	B	COMPUTERS/PERIPHERALS:
08. ☐	☐	Micros
09. ☐	☐	Minis
10. ☐	☐	Mainframes
11. ☐	☐	Front End Processors
12. ☐	☐	Terminals
13. ☐	☐	Laptops
14. ☐	☐	Printers
15. ☐	☐	Work Stations
16. ☐	☐	Cluster Controllers

(continued on next column)

Presently Involved A	Plan to Purchase B	SOFTWARE:
17. ☐	☐	Network Management
18. ☐	☐	Micro to Mainframe
19. ☐	☐	Network Security
20. ☐	☐	Call Accounting
21. ☐	☐	Distributed DBMS
22. ☐	☐	Communications Software
23. ☐	☐	Applications Software
24. ☐	☐	Network Operating Systems Software
25. ☐	☐	EDI Software
26. ☐	☐	E-Mail Software
A	B	DATA COMMUNICATIONS:
27. ☐	☐	Modems (over 9.6kbps)
28. ☐	☐	Modems (under 9.6kbps)
29. ☐	☐	T-1 Multiplexers
30. ☐	☐	T-3 Multiplexers
31. ☐	☐	Fractional T-1 Multiplexers
32. ☐	☐	Data Switches
33. ☐	☐	Matrix Switches
34. ☐	☐	Packet Switches
35. ☐	☐	Protocol Converters
36. ☐	☐	Network Management Systems
37. ☐	☐	Terminal Emulation Boards
38. ☐	☐	Facsimile Machines
39. ☐	☐	Diagnostic Test Equipment
40. ☐	☐	DSU/CSU
41. ☐	☐	Data Security
42. ☐	☐	Data Compression Equipment
43. ☐	☐	Network Adapter Boards
44. ☐	☐	Microwave
45. ☐	☐	Messaging Software
A	B	TELECOMMUNICATIONS:
46. ☐	☐	PBXs (over 1000 lines)
47. ☐	☐	PBXs (200 - 1000 lines)
48. ☐	☐	PBXs (under 200 lines)
49. ☐	☐	Key Systems
50. ☐	☐	Automatic Call Distributors
51. ☐	☐	Voice Messaging Systems
52. ☐	☐	Video Teleconferencing Systems
A	B	SERVICES:
53. ☐	☐	Switched Voice
54. ☐	☐	Dedicated Leased Line
55. ☐	☐	T-1
56. ☐	☐	T-3
57. ☐	☐	Digital Data
58. ☐	☐	Packet Switched
59. ☐	☐	Centrex
60. ☐	☐	Central Office Lan
61. ☐	☐	Satellite
62. ☐	☐	On-Line Information
63. ☐	☐	ISDN
64. ☐	☐	EMail
65. ☐	☐	VSAT

17 Estimated value of networking equipment and services:

A: Which you helped specify, recommend or approve in the last 12 months?

B: Which you plan to help specify, recommend or approve in the next 12 months?

A	B	
1 ☐	☐	$100 million and over
2 ☐	☐	$50 - $99.9 mill
3 ☐	☐	$25 - $49.9 mill
4 ☐	☐	$20 - $24.9 mill.
5 ☐	☐	$10 - $19.9 mill.
6 ☐	☐	$5 - $9.9 mill.
7 ☐	☐	$1 - $4.9 mill.
8 ☐	☐	$500,000 - $999,999
9 ☐	☐	Under $500,000

18 Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ over $10 billion
2. ☐ $1 to $9.9 bill.
3. ☐ $500 to $1 bill.
4. ☐ $100 to $499.9 mill.
5. ☐ $50 to $99.9 mill.
6. ☐ $10 to $49.9 mill.
7. ☐ $5 to 9.9 mill.
8. ☐ under $5 mill.

19 Estimated number of employees for your entire corporation:

1. ☐ over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ under 500

20 Which of the following ISDN products do you plan to purchase in the next 12 months? (check all that apply)

1. ☐ Basic Rate Interface Terminal Adapters
2. ☐ Primary Rate Interface Equipment
3. ☐ Voice/Data terminals
4. ☐ Voice-only terminals
5. ☐ Data-only terminals

21 From which of the following vendors will you consider buying your PBX/Central Office Switch? (check all that apply)

A PBX	B COS	
A ☐	☐	AT&T
B ☐	☐	ALCATEL
C ☐	☐	ERICSSON
D ☐	☐	FUJITSU
E ☐		HARRIS
F ☐		HITACHI
G ☐		ROLM
H ☐		INTECOM
I ☐		MEMOREX TELEX
J ☐		MITEL
K ☐	☐	NEC
L ☐	☐	NORTHERN TELECOM
M ☐		SAMSUNG
N ☐	☐	SIEMENS
O ☐		STROMBERG-CARLSON
P ☐		TOSHIBA
Q ☐	☐	OTHER ____________

NETWORK WORLD
The Newsweekly of Enterprise Networking Strategies
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9616B

TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

AT&T said it added an average of one Integrated Services Digital Network Primary Rate Interface customer a day during the month of October.

Carrier Watch

The Federal Communications Commission revealed last week that **MCI Communications Corp.** is planning to file a petition asking the agency to reconsider its decision to implement price cap regulation for the local exchange carriers.

The FCC granted an MCI request to file a 40-page petition, almost twice as long as the 25-page limit mandated by commission rules.

MCI had originally asked for permission to file a 75-page document. The carrier said the complexity of the issues relating to the new form of regulation made it impossible to cover the matter in 25 pages.

The Federal Communications Commission last week allowed four more **AT&T** Tariff 12 deals to take effect — two of which are believed to be for Computer Language Research, Inc. and Textron, Inc.

Since October, when a federal appeals court overturned the FCC's decision allowing AT&T to offer Tariff 12 deals, the commission has allowed eight deals to take effect.

The FCC must now reopen its investigation into whether Tariff 12 deals are lawful. While some observers had speculated that the commission would include new deals in that proceeding, the FCC took the less drastic step of allowing the tariffs to take effect but making them subject to the outcome of the investigation.

All of the deals that have been allowed to take effect were filed before the court issued its ruling. However, there is some doubt as to the legal status of three pending deals that were filed after the court's order.

Pacific Bell's planned Commstar CLASS services

Service	Monthly charge	Installation
Caller ID	$7.50	$6.00
Repeat dialing	$5.00	$6.00
Call return	$5.00	$6.00
Call block	$5.00	$6.00
Call trace	—	$10.00*
Priority ringing	$5.00	$5.00
Select call forwarding	$5.00	$5.00

*Plus an additional $10.00 per number

GRAPHIC BY SUSAN SLATER

SOURCE: PACIFIC BELL, SAN FRANCISCO

Pacific Bell set to release Commstar CLASS offerings

Services include caller ID with per-call blocking.

By Bob Wallace
Senior Editor

Pacific Bell recently announced plans to roll out late next year seven Custom Local Area Signaling Services (CLASS), including caller identification with free per-call blocking.

The Commstar services include caller ID, repeat dialing, call return, call blocking, call trace, priority ringing and select call forwarding. They will be available in California's 213, 818, 415 and 408 area codes in October 1991, and in the 707, 714 and 805 area codes and in parts of Los Angeles in mid-1992.

Caller ID is the only controversial service among the group. Prior to a call's arrival, it displays the calling party's phone number on a separately purchased display attached to the telephone set.

All users subscribing to CLASS services will be able to prevent their numbers from being displayed by pressing the star key and a two-digit code on their push-button telephones or by dialing a four-digit code on a rotary telephone before placing the call.

The functions of the other services are:

- **Repeat dialing** automatically monitors a busy number for 30 minutes and completes the call once the line is free.
- **Call return** automatically redials the telephone number of the last person called even if the call wasn't completed.
- **Call block** rejects calls from phone numbers prespecified by the user. A recording says, "The party you are calling is not accepting this call. Thank you."
- **Call trace** enables users to automatically trace the originating telephone number of disturbing calls. These numbers are held in a Pacific Bell computer file and passed to the proper authorities.
- **Priority ringing** provides a unique ring when a call is received from telephone numbers preset by the user.
- **Select call forwarding** routes calls from preset telephone numbers to a second telephone number.

Caller ID costs $7.50 a month and carries a $6 installation fee. Call trace has a $10 onetime installation charge and a $10 fee for each number traced.

The other five services cost $5 a month each and carry a onetime $6 installation fee.

MCI sells three financial services providers on Vnet

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — MCI Communications Corp. last week made public contracts, worth a total of $30.75 million, that it has won in recent months from New York Life Insurance Co., National Westminster Bancorp, Inc. (NatWest) and Connecticut Mutual Life Insurance Co.

The three financial services firms are shifting voice traffic away from WATS and other switched services to Vnet, MCI's virtual private network offering.

Patricia Ryan, vice-president of telecommunications at NatWest, emphasized that details, such as MCI's willingness to supply a list of employee names and

(continued on page 15)

Study links telecom to health of economy

Report offers first conclusive evidence of link between telecom usage and economic vitality.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The increased usage of new telecommunications technologies during the past 20 years has saved corporations billions of dollars in labor and capital expenses, according to a report released last week by the regional Bell holding companies.

The report was prepared by Boston-based research firm DRI/McGraw-Hill, Inc. for the RBHCs and four independent local carriers. It was submitted to the National Telecommunications and Information Administration (NTIA) earlier this month as part of a comprehensive investigation into the nation's telecommunications infrastructure and the role it plays in economic growth and corporate competitiveness.

The study found that from 1963 to 1982, corporations increased their usage of telecommunications by more than 150% on average. The finance and insurance industry topped the list of customers boosting their telecommunications usage.

Using 1963 as a base year, the report compared corporate expenditures from that year to 1982. It concluded that U.S. corporations saved $65.7 billion in 1982 compared to 1963 by using telecommunications to replace more expensive personnel and capital investments.

The savings were due to two factors: Corporations relied more on telecommunications than on personnel, plant and materials; and carriers increased the efficiency of providing telecommunications services, driving down prices and freeing up capital.

This is the first time a report has conclusively shown a link between telecommunications usage and the overall health of the U.S. economy, said James Sylvester, director of infrastructure at Bell Atlantic Corp.

Although the report does not provide information for the years after 1982, DRI/McGraw-Hill researchers believe that annual savings resulting from increased telecommunications usage are even higher now, according to

(continued on page 15)

WASHINGTON UPDATE

BY ANITA TAFF

Expressing views on the AT&T examination. It is widely believed that the Federal Communications Commission's proceeding examining AT&T's dominance in the interexchange marketplace, which could lead to lessened regulation for the carrier, will not be completed until spring. But industry groups are taking advantage of opportunities to press their viewpoints now.

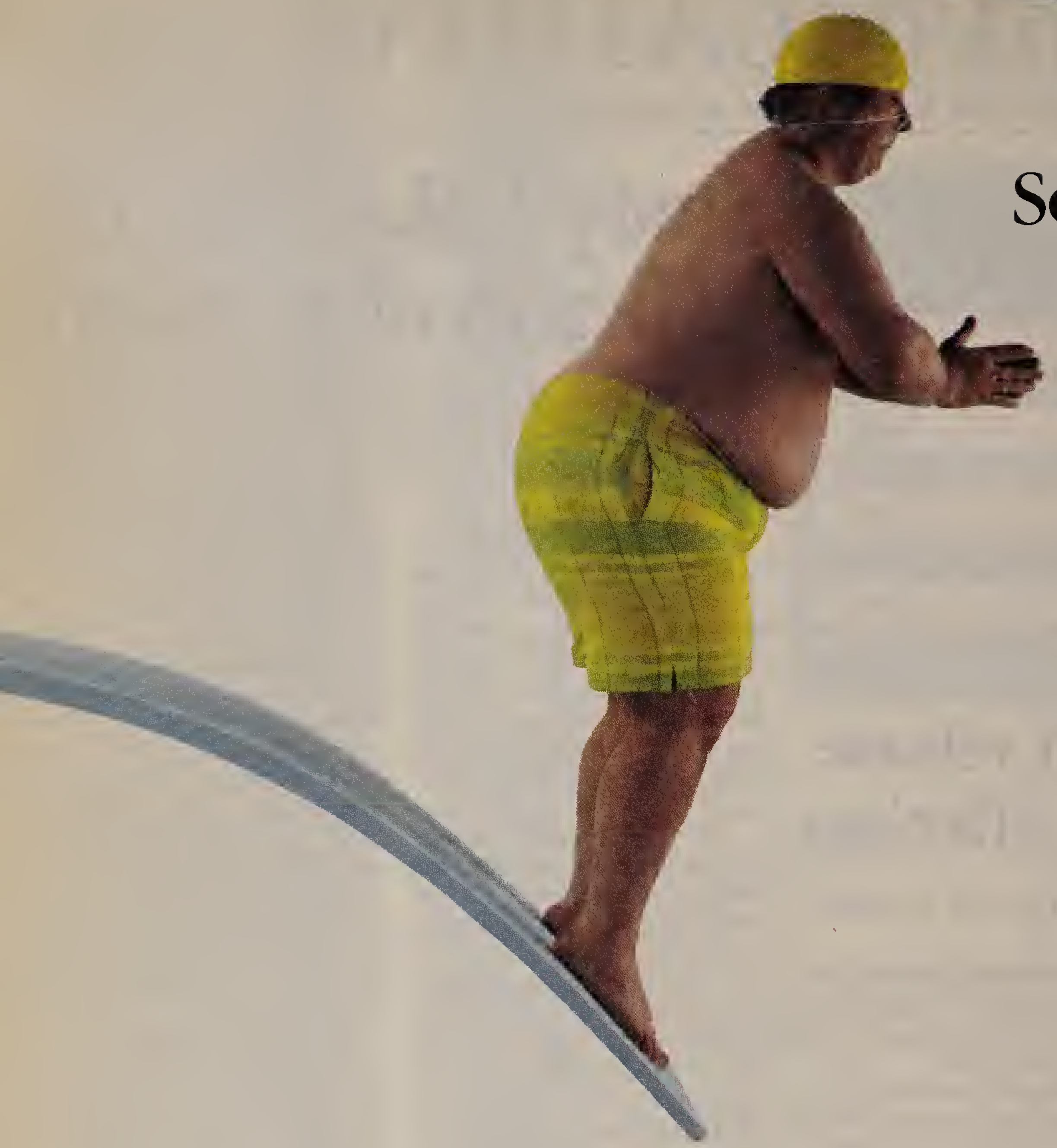
Since the beginning of November, more than 30 officials from small long-distance companies and telecommunications equipment retailers have written to their legislators expressing concern about the impact of lessening regulation for AT&T. In particular, they are concerned about a proposal that would allow AT&T to bundle telecommunications equipment with regulated services, an activity from which AT&T is now barred.

The officials said they feared that smaller providers would be driven from the marketplace if forced to compete with "a subsidized giant." The letter added, "Once we are gone, the customer will pay higher, unchecked prices."

The letters were forwarded to the FCC by various lawmakers who asked the FCC to respond to the companies' concerns. In return, the commission sent out letters to Congress and AT&T officials stating that it is studying an extensive set of comments on the bundling issue.

"I assure you that the commission will carefully consider this record in weighing the impact any change in our bundling restrictions would have on the marketplace," said Richard Firestone, chief of the FCC's Common Carrier Bureau.

IRMAtrac Token-Ring is now shipping.



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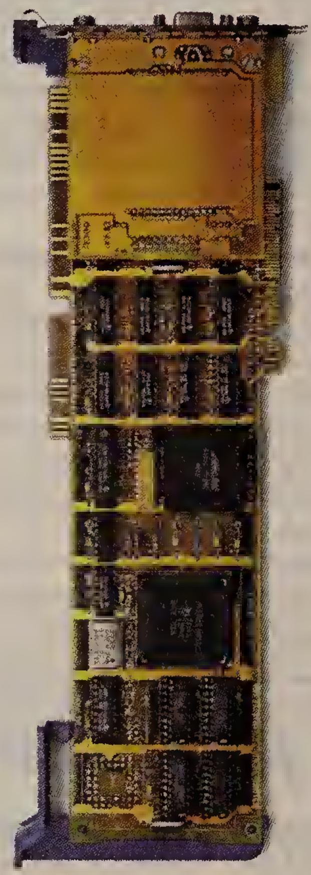

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That way, you can select the path that's right for your business, all the while enjoying the kind of reliability and IBM® compatibility that make DCA's IRMA products so highly successful.

Yet our appeal doesn't stop at flexibility. IRMAtrac offers better performance than IBM's token-ring due to bus-master technology.

And we're compatible with the industry-leading network operating systems, including Novell® Netware® 286 and 386, DCA 10Net,® Microsoft® LAN Manager, 3 + Open,™ IBM LAN Server Program, and IBM PCLAN Program. Plus, other microcomputer architecture versions, such as Macintosh, will be available in the future. Which is highly unlikely from IBM.

In short, IRMAtrac represents the ultimate token-ring connectivity solution.

For more information on IRMAtrac Token-Ring just call us at 1-800-241-IRMA, ext. 64R.*

DCA

*Or call 1-404-442-4500 ext. 64R. © 1990 Digital Communications Associates, Inc. All rights reserved. DCA and 10Net are registered trademarks and IRMAtrac is a trademark of Digital Communications Associates, Inc. All other brand and product names are trademarks or registered trademarks of their respective owners.

See The FAXNeT Form on Page 45

Telecom linked to economy

continued from page 13

Francis Cronin, project director at DRI/McGraw-Hill. This is because usage of telecommunications and the introduction of new, efficient technology have grown rapidly during the past eight years, he said.

Researchers at DRI/McGraw-Hill did not analyze the data on telecommunications usage beyond 1982 for two reasons: There was not sufficient data available from the U.S. government to analyze those years, and DRI/McGraw-Hill wanted to screen out any possible effects that divestiture had on the economy, Cronin said.

The RBHCs are pointing to the study as proof that telecommunications is so vital to the economic health of the U.S. that action must be taken to turn today's patchwork quilt of regulation into a coherent national policy.

"Our total public policy structure, including regulation, is very fragmented," said Ivan Seidenberg, chairman of the U.S. Telephone Association, which filed earlier comments in the NTIA proceeding. "Until our industry and government officials rally around [a coherent telecommunications] plan, we are at great risk of losing our lead and our ability to support the nation's economy with technological advancements."

The RBHCs may also use the report to further their lobbying efforts on several major industry issues, including price cap regulation, removal of the Modified Final Judgment business restrictions and more favorable depreciation rates for major equipment such as central office switches and fiber-optic cable, Sylvester said.

The report has been distributed to the Federal Communications Commission and will be sent to Capitol Hill when lawmakers return for the next congressional session. ◻

MCI sells three on Vnet

continued from page 13

home phone numbers that could be called in a crisis, were deciding factors in the three-year, $9 million contract NatWest awarded MCI last August.

In addition to Vnet, which will be used to provide voice communications for NatWest's 300 branches in New York and New Jersey, MCI is also supplying nine T-1 lines as a data network backbone for NatWest's 250 automated teller machines.

Ryan said MCI's management reports and billing summaries had a more comprehensible format than those presented by AT&T during negotiations.

NatWest is now using MCI's network management services, Vnet configuration management, Network Information Management System and MCI View. By selecting MCI as its sole carrier, NatWest is dropping AT&T and Metromedia-ITT.

Carol Springsteen, assistant vice-president of telecommunications at New York Life, said service was the key factor in her company's decision a week ago to award MCI a three-year, $18 million contract.

"It was their ability to provide a superior implementation plan and tracking system," said Springsteen, emphasizing that bidding was close among the competing carriers.

MCI's Vnet will provide voice connections for 300 New York Life locations and about 4,500 independent agents across the country, with savings estimated at 20% to 30%, Springsteen said.

MCI will now carry almost all of New York Life's voice traffic. Previously, MCI, US Sprint Communications Co. and AT&T combined carried 50% while the remaining half went to other long-distance carriers.

Connecticut Mutual awarded MCI a three-year, $3.75 million contract because MCI's billing system, installation costs and support appeared to be the best, said Kay Haislip, a telecommunications officer at the firm.

Connecticut Mutual's decentralized corporate environment enables each branch location to voluntarily select its own long-distance carrier. Roughly a third of the company's 60 locations have joined Vnet, Haislip said, adding that the company anticipates annual savings of 20%. ◻

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MNP 5, V.42 and V.42bis have become the international standards for error correction and data compaction. The DCM4232 includes all three. It also includes AT command-initiated diagnostics, auto-answer, auto-dial and a unique, independent control port that lets you configure and test from a remote terminal. The DCM4232 operates full-duplex over dial and two- and four-wire private lines at speeds to 9,600 bps. It is end-to-end compatible with V.32/V.22/V.22bis and 212/113/103 modems.

CASE/Datatel is part of the Dowty Group PLC, a $1.2 billion company with operations in 40 countries and 14,000 employees worldwide. For more information on the DCM4232 V.32 modem, call 800-227-3134 or write CASE/Datatel, Inc., 9020 Junction Drive, Annapolis Junction, Maryland 20701.

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And as the Hula-Hoop®
Reg. T.M. of Kransco
impending doom closed
burst into the small
large metal switching
And I said in a voice
turn into a Nehru
then, above the hiss of
"Relax. You bought an
you expand, up to 90%
Investment protection . . .
be yours." And as I drove
I felt good because life, after

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waving good-bye....I cleaned the garage
obsolescence. Go-go boots and lava lamps.
settled around my ankles, this feeling of
in on me like night. So I rushed to work,
room most people avoid and stared at this
device sitting there Buddha-like in the dark.
soft as a prayer, "Don't get old on me. Don't
jacket. Grow. Expand. 30,000 lines." And
the air conditioner, I heard this voice say,
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DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

Netrix Corp. recently formed a user group for users of its #1-Integrated Switching System, an integrated packet and circuit switch. Users from Oracle Corp., facsimile service provider NetExpress, Inc. and retailer Revco D.S., Inc. met last month to discuss ways Netrix can improve its product and to examine the vendor's plan to support frame relay.

Data Packets

SunGard Recovery Services, Inc. recently announced a disaster recovery service for users of voice response systems.

The disaster recovery firm is installing Syntellect, Inc. Infobot and IBM 9270 voice processors that support voice response applications in its Philadelphia disaster recovery center. When a disaster strikes a service subscriber's own voice response units, incoming calls can be rerouted from the subscriber location to SunGard's Philadelphia center using carrier services.

SunGard will attach a minimum of eight incoming telephone lines to a single voice response unit in Philadelphia. That unit will play prerecorded voice prompts that instruct callers to enter specific data. The voice response unit will pass data entered by the caller to a SunGard terminal controller that emulates an IBM 3270 terminal or a Digital Equipment Corp. VT-100.

The controller will then pass the data to an IBM host, a DEC VAX or a Stratus Computer, Inc. transaction processor that will either record the data or provide the requested information back to the voice response unit, which will speak it to the caller. ◘

Cornell tests T-3 links to support graphics transfer

Demonstrates capability at Supercomputer '90.

By Paul Desmond
Senior Editor

NEW YORK — Cornell University's Theory Center recently participated in a high-speed net demonstration in which it established a remote graphics session with an IBM supercomputer and a remote display monitor via a T-3 line.

The demonstration, conducted at the recent Supercomputing '90 conference here, highlighted the feasibility of conducting complex graphics simulations and analysis over high-speed wide-area networks.

The demo featured the conversion of complex data sets stored on Cornell's IBM 3090 supercomputer in Ithaca, N.Y., to visual form for display on a graphics monitor 300 miles away on the show floor.

Cornell's 3090 was linked to Ultra Network Technologies, Inc.'s UltraNet 1000 hub, which supports 1G bit/sec transmission speeds over a local-area network. The UltraNet, in turn, was linked to a T-3 line provided by New York Telephone Co. via Ultra Network's DS3 Remote Link, which ties remote UltraNet 1000 hubs together over T-3 circuits.

A dedicated T-3 line provided by MCI Communications Corp. provided the long-haul link to a similar setup on the show floor.

The demonstration was intended to show how switched T-1 and T-3 services, which MCI said it would begin to offer in 1991, could be used to break the public network bottleneck that traditionally prevents wide-area networking among high performance supercomputing facilities. However, both MCI and New York Telephone used dedicated T-3 links in the demonstration. ◘

Trucking firms to install vehicle tracking networks

By Paul Desmond
Senior Editor

SAN DIEGO — Arrow Trucking Co. and MNX, Inc., the two latest trucking companies to sign on for Qualcomm, Inc.'s satellite-based truck tracking and two-way data communications system, are both expecting big savings from the system.

Arrow, headquartered in Tulsa, Okla., will outfit 250 new trucks with a total of nearly $1 million worth of Qualcomm's OmniTRACS equipment and expects the system to pay for itself in a year. MNX, located in St. Joseph, Mo., will spend nearly $3 million to equip 750 trucks with Qualcomm transceivers and data communications equipment and is expecting a two-year payback on its investment.

The OmniTRACS system consists of a keyboard and display unit that is installed inside a truck's cab and linked to an antenna and transceiver device also attached to the truck. Via satellite, truck drivers can send and receive messages from a dispatcher located anywhere in the U.S.

The system can also be used to track truck movements to within 1,000 feet, according to Qualcomm, which is based here.

Both features offer advantages, the trucking firms said.

"We think we can get another 10% to 15% productivity out of each [truck] per month," said Jim Pielsticker, president of Arrow Trucking.

That's because the company will be able to accurately determine when a truck will arrive at its destination, which lets dispatchers know when it will be free to pick up a new load.

Duane Boswell, vice-president of MNX, said the system helped his company secure a contract with Whirlpool Corp. Thirty trucks dedicated to the Whirlpool account have been serving as a test bed for the OmniTRACS system since September.

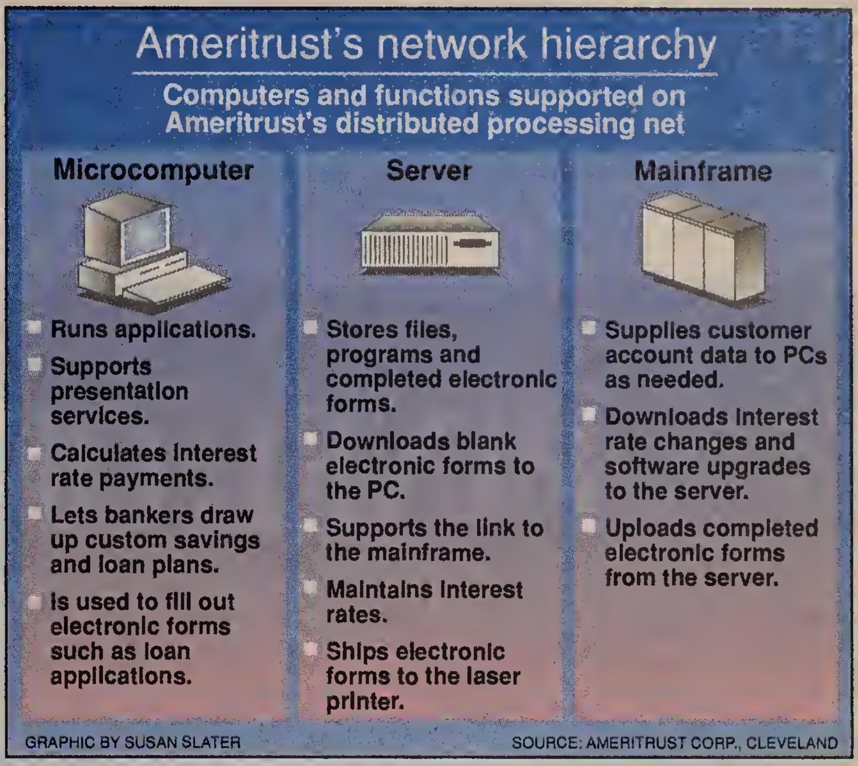
"They wanted to know we had a high degree of quality control," Boswell said. "This is one of the best ways of being able to ensure that we know the status of their shipments all the time."

Improvements in customer service provide a value beyond the operating efficiencies OmniTRACS provides, he said.

"And drivers love it. It saves them an awful lot of time on the telephones [and] waiting to use phones," Boswell said.

Pielsticker said OmniTRACS can even help reduce fuel costs by letting headquarters closely monitor truck routes and inform drivers where they should refuel.

"We'll shorten the list of approved stations and concentrate our buying power to get better prices," he said. ◘



Ameritrust's network hierarchy

Computers and functions supported on Ameritrust's distributed processing net

Microcomputer
- Runs applications.
- Supports presentation services.
- Calculates interest rate payments.
- Lets bankers draw up custom savings and loan plans.
- Is used to fill out electronic forms such as loan applications.

Server
- Stores files, programs and completed electronic forms.
- Downloads blank electronic forms to the PC.
- Supports the link to the mainframe.
- Maintains interest rates.
- Ships electronic forms to the laser printer.

Mainframe
- Supplies customer account data to PCs as needed.
- Downloads interest rate changes and software upgrades to the server.
- Uploads completed electronic forms from the server.

GRAPHIC BY SUSAN SLATER

SOURCE: AMERITRUST CORP., CLEVELAND

Ameritrust banking on distributed net

Platform automation network enables branch personnel to access data on mainframe host.

By Jim Brown
Senior Editor

CLEVELAND — Ameritrust Corp. is cashing in on a three-tier distributed processing architecture that will enable branch personnel to improve customer service and increase sales.

Despite signs of a sluggish national economy, the bank holding company is moving ahead with plans to deploy a platform automation network in 220 branches in Indiana, Michigan and Ohio.

The net enables customer service representatives to open new accounts electronically as well as merge customer data from several different data bases and use microcomputer- or server-based applications to create customized savings and loan programs.

Ameritrust worked with Digital Equipment Corp. under a special contract to acquire the hardware and customized software needed to support the three-tier architecture. DEC announced last week that it is offering similar services to other banks under its DECbank program.

In its network, Ameritrust will link teller terminals and microcomputers via Ethernet to an on-site DEC VAXserver 3100 that provides network print and file services as well as a link to Ameritrust's IBM 3090 mainframe here. The project is being implemented to support Ameritrust's strategic decision to bolster its retail banking operations.

"Our objective is to support a retail strategy aimed at providing improved customer service and improving sales figures," said Robert Salipante, executive vice-president of Ameritrust's banking services group.

The decision to move ahead with the project was made last summer after successful pilot tests at 10 branches of Ameritrust Co., N.A., Ameritrust's largest subsidiary with 105 branches in northeast Ohio.

"We spent months doing assessments on live production pilots," Salipante said. "Those results were sufficiently encouraging that we're proceeding very aggressively with the rollout. We're confident that this retail strategy works and that this technology supports that strategy."

> "Our objective is to support a strategy aimed at improved customer service."
>
> ▲▲▲

Ameritrust recently bought 19 DEC VAXserver 3100es, which are customized versions of the MicroVAX 3100e announced last month. Each new VAXserver 3100e provides simultaneous services for as many as 70 microcomputers, 20 more than previous models.

The VAXserver 3100es will be installed at branches in northeast Ohio, and the bank expects to have the platform automation project completed there in the

(continued on page 20)

Ameritrust banks on net

continued from page 19

first quarter of 1991, Salipante said. Although Ameritrust has yet to finalize a schedule for rolling out platform automation to its other banks, he said the project could be completed as soon as the end of 1991.

Under the project, each branch is outfitted with an Ethernet network that supports microcomputers, a VAXserver 3100 or VAXserver 3100e and an Ericsson controller supporting directly attached teller terminals. Microcomputers and the Ericsson controller communicate with the VAXserver using DECnet.

The VAXserver is linked to a port on an AT&T Paradyne Multiple Virtual Modem (MVM) at 9.6K bit/sec. The MVM also receives traffic from automated teller machines at 2,400 bit/sec and bank security devices such as alarms at 1,200 bit/sec.

The MVM uses time-division multiplexing to combine traffic from all three sources onto a multidrop analog leased line operating at 14.4K bit/sec. Those analog circuits are fed to Ameritrust's nearest Timeplex, Inc. Link/2 T-1 multiplexer, which routes data to an IBM 3745 front-end processor here.

This setup enables the VAXservers to pass customer account data from microcomputers and teller terminals to the host. It also enables Ameritrust to distribute such information as interest rates that fluctuate daily from the host to each VAXserver.

That information is used by microcomputers to calculate savings and loan interest payments for customers.

The bank is also able to distribute application upgrades from the data center to each VAXserver, which will pass the upgraded software to microcomputers. This ensures that the microcomputers are using the latest version of each application.

Another benefit is that Ameritrust can store electronic templates of such banking forms as loan applications on each VAXserver. Customer service representatives download that template to the microcomputer, fill in needed information and print the form on an Ethernet-attached laser printer. Electronic copies of completed forms are uploaded to the host at night.

"We've been able to do away with preprinted forms and duplicate data entry," Salipante said. Doing this ensures that each branch is using the most up-to-date form.

When Ameritrust decided to implement platform automation, Salipante began looking for a system that would not force him to abandon the Ericsson teller terminals installed in the early 1980s. Those terminals support on-line processing of such teller transactions as updating passbook accounts to reflect a deposit or withdrawal.

"We didn't want to retool the teller terminals because they were working fine," Salipante said. "We wanted to make our investment on the sales side."

The VAXserver 3100 and 3100e helped meet this objective because its VMS operating system enabled Ameritrust to build the custom software needed to support teller terminal and platform automation applications.

Using software that Ameritrust developed with DEC and Ericsson, the VAXserver takes incoming data from Ericsson controllers and converts it from Ericsson's proprietary format to VAX format.

DEC's VMS/Systems Network Architecture software running on the VAXserver then wraps that data, along with asynchronous data from microcomputers, into IBM Synchronous Data Link Control packets for transmission to the host.

Support for DEC's VMS/SNA software also enabled Ameritrust to replace IBM's 3270 Binary Synchronous Communications protocol, which was previously used to pass traffic from the Ericsson teller terminal controller to the host, with IBM's more advanced SDLC protocol.

"We got some benefits by going with a more efficient protocol," said Bernard Survoy, Ameritrust's vice-president of technical services. These benefits include improved terminal-to-host response time and the ability to monitor remote devices better via IBM's NetView network management package. ◼

PANEL OF EXPERTS

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Eric Benhamou
President and
chief executive officer
3Com Corp.
Santa Clara, Calif.
Speaking at a Comdex/Fall
session on client/server
computing

Netnotes

Future Soft Engineering Corp. and **Mitek OpenConnect Systems Corp.** recently unveiled DynaComm/OpenConnect TN3270, a jointly developed product that enables Ethernet-based personal computers to set up IBM 3270 terminal-emulation sessions over Transmission Control Protocol/Internet Protocol links.

TN3270 is an extension to TCP/IP's Telnet virtual terminal protocol that enables users to run 3270 sessions over a Telnet link.

The software, which is scheduled to be available in the first quarter of 1991, costs $495 in single-user quantities, $235 per user in five-user quantities and $205 per user in quantities of 10.

Future Soft Engineering can be reached at 1001 S. Dairy Ashford, Suite 101, Houston, Texas 77077; (713) 496-9400. Mitek can be contacted at 2033 Chennault Drive, Carrollton, Texas 75006; (214) 490-4090.

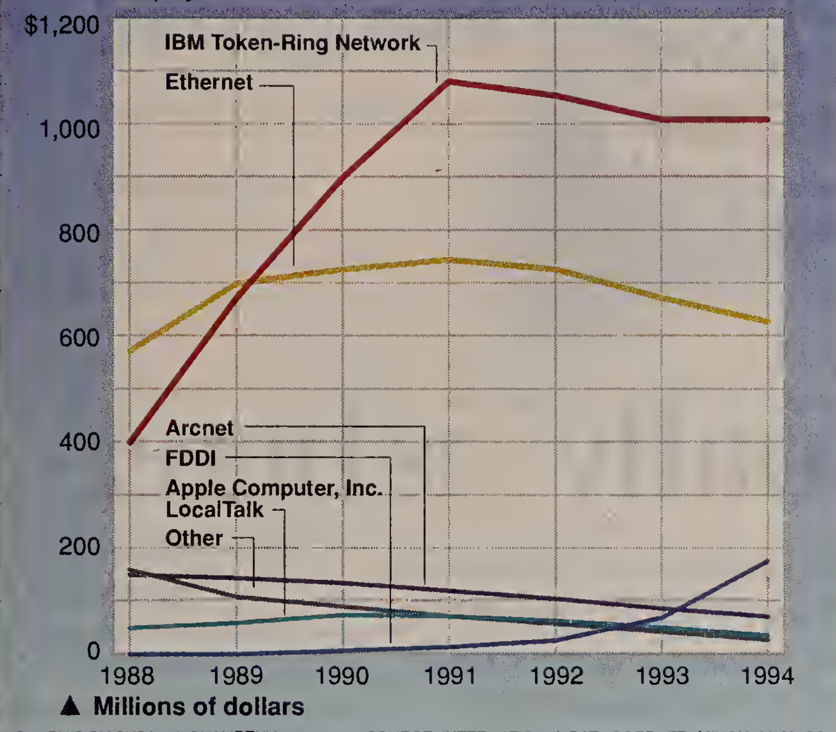
Informix Software, Inc. recently announced that its OnLine data base management system will be available later this quarter for Digital Equipment Corp.'s recently announced Intel Corp. 80486-based multiprocessor local-area network server.

In addition to OnLine, Informix said its Informix-SE SQL-compliant DBMS will be available on DEC's new server, the applicationDEC 433 MP.

For more information, contact Informix at 4100 Bohannon Drive, Menlo Park, Calif. 94025; (415) 926-6300.

The changing fortunes of LAN technology

Current and projected worldwide revenue from sales of PC network interfaces



GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

Superserver vendors add 33-MHz 80486 versions

ALR, Bestway offer competition to SystemPro.

By Tom Smith
Senior Writer

Advanced Logic Research, Inc. (ALR) and Bestway Systems, Inc. recently expanded their superserver product families with the introduction of 33-MHz Intel Corp. 80486-based systems.

ALR, based in Irvine, Calif., unveiled five servers that scale from a single 80486 with 64K bytes of cache memory to a dual-80486 unit with 1M byte of cache.

The firm, which positions its products against Compaq Computer Corp.'s SystemPro, previously offered 33-MHz single-processor 80386- and 80486-based servers.

The new Extended Industry Standard Architecture (EISA)-based ALR Powerpro servers will run a variety of operating systems, including Banyan Systems, Inc.'s VINES, The Santa Cruz Operation, Inc.'s SCO Unix and Novell, Inc.'s NetWare 386. ALR is testing the product for use as an OS/2 LAN Manager server.

The Powerpro line can support as many as 64 LAN users and has 10 expansion slots. It scales from 14.7 million instructions per second (MIPS) to 40 MIPS.

Vic Sangveraphunsiri, vice-president of systems engineering at ALR, claims that the floor-standing Powerpro will provide better performance than the Compaq SystemPro because it has more cache memory and a better caching technique.

Pricing for the Powerpro begins at $7,495 for a system configured with 5M bytes of random-access memory, 64K bytes of cache memory and no hard disk. The same system with an 80M-byte Enhanced Small Device Interface hard disk costs $8,495.

A high-end Powerpro with 17M bytes of RAM, 1M byte of cache memory and 2.4G bytes of arrayed Small Computer Systems Interface (SCSI) hard disk storage costs $24,595.

The Powerpro is scheduled for availability in the first quarter of next year.

Bestway, based in Yonkers, N.Y., introduced the rack-mountable Stinger 486/33ER, a 33-MHz 80486 single-processor server. The other servers in the company's Stinger line include a 25-MHz 80486 server and a 33-MHz 80386 server. All are alternatives to Compaq's SystemPro.

The Stinger 486/33ER, which runs Unix, NetWare and OS/2 LAN Manager, supports a maximum of 200 LAN clients or 150 terminals if it is configured as a multiuser system.

The EISA bus-based Stinger 486/33ER has eight expansion slots. It comes standard with 8M bytes of RAM, expandable to 32M bytes, and 128K bytes of cache memory on the CPU board. A 32-bit SCSI controller supports internal SCSI hard disk storage ranging from 385M bytes to 4.86G bytes. With additional external storage enclosures, the system will support up to 33G bytes of hard disk space.

Pricing for the Stinger 486/33ER ranges from $24,000 to $132,600.

User shifts 'tactical' LAN tasks to vendors

Approach enables pharmaceutical firm to focus on strategic functions affecting the bottom line.

By Tom Smith
Senior Writer

LAS VEGAS — Contracting out tactical local-area network functions such as net implementation and maintenance can help users focus on more strategic LAN functions, according to a manager who outlined his company's LAN strategy at an outsourcing session during the recent Comdex/Fall conference here.

This strategy frees up internal staff to focus on tasks such as LAN planning, administration and technology assessment, according to Larry Pickett, manager of end-user computing in the MIS department at Glaxo, Inc., a pharmaceutical firm in Research Triangle Park, N.C.

Glaxo had three primary objectives for outsourcing LAN functions, Pickett said. First, as with many users, there were head count limitations that prevented the company from expanding its technical staff.

Paralleling this problem was the increasing LAN support needs generated by a burgeoning number of users.

Finally, the company wanted to give staff members the opportunity to assess new technologies in order to exploit them better for competitive advantages.

After setting these objectives, the company decided to categorize its LAN services and functions to determine which ones could be managed by vendors. Based on these criteria, tactical functions were considered good candidates for outsourcing while strategic functions would continue to be handled in-house.

Glaxo defines tactical functions as services that are mature, fully understood and repetitive, Pickett said. Strategic services, by contrast, are those that affect the revenue or profitability of the company or those that impact the company's long-term goals.

Based on these definitions, the company determined that three of its six LAN services should be contracted out. Network implementation, which includes testing, installation and configuration, as well as user training and LAN maintenance are all now being handled by outside vendors. Maintenance includes monitoring, troubleshooting, repairing, tuning and performing network upgrades.

"We really wanted to divest ourselves of those [tasks] because they take a significant amount of our time," Pickett said.

Remaining in-house functions include analyses of hardware and software requirements. "We didn't want vendors telling us

(continued on page 66)

Cabletron Systems offers mid-range MMAC chassis

ROCHESTER, N.H. — Cabletron Systems, Inc. last week rounded out its Multi-Media Access Center (MMAC) LAN hub product family with a five-slot mid-range chassis.

MMAC is a local-area network wiring hub that supports Ethernet and token-ring LAN interfaces for a variety of media, as well as LAN bridges, including Ethernet-to-Ethernet, token ring-to-token ring and Ethernet-to-Fiber Distributed Data Interface bridges.

The MMAC family previously included three- and eight-slot chassis, but Cabletron found a number of users for whom the three-slot chassis was too small and the eight-slot chassis was too large, said Chris Oliver, director of engineering at the firm.

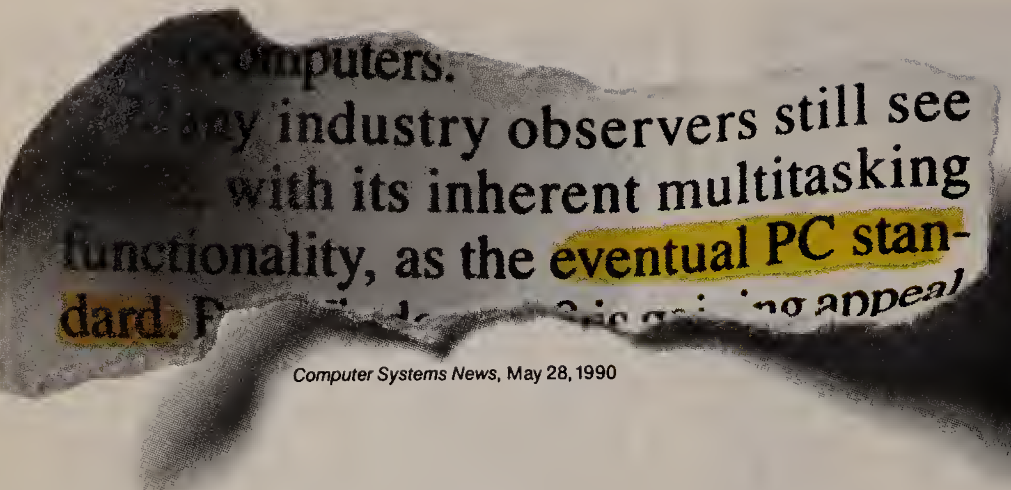
"Now we're satisfying the needs of all our users," he said.

The five-slot MMAC chassis, known as the MMAC-5 Flexible Network Bus (FNB), supports 120 users. The three- and eight-slot chassis support 48 and 168 users, respectively.

Like the other members of the MMAC line, MMAC-5FNB can be managed using either of Cabletron's Simple Network Management Protocol-compliant software packages, Remote LANview and Spectrum.

The MMAC-5FNB is available now, with a per-port cost ranging from $150 to $600, depending on the configuration. The chassis itself costs $1,550.

The three- and eight-slot versions of the MMAC chassis, by comparison, cost $1,295 and $1,850, respectively.


computers.
...ny industry observers still see
... with its inherent multitasking
functionality, as the eventual PC stan-
dard.

Computer Systems News, May 28, 1990

"Eventually" is here.

ANNOUNCING THE OS/2 YOU'VE BEEN WAITING FOR.

For quite some time, the press has been writing about the move everyone will want to make to OS/2.®

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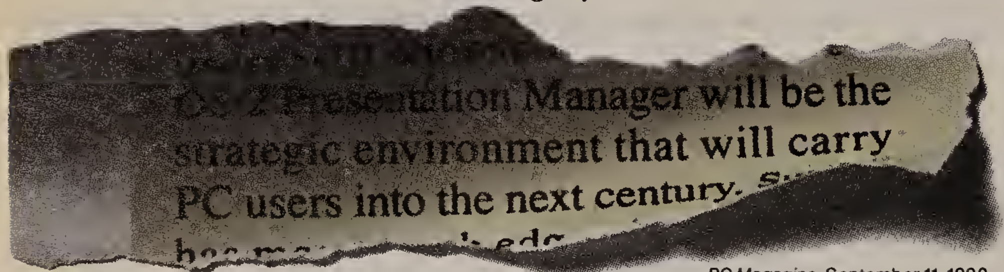
Well, all at once OS/2 1.3 has made OS/2 the operating system it was meant to be—the one you'll want to move to right here and now.

OS/2 LOSES A LITTLE WEIGHT.

For starters, OS/2 has lost some of its appetite for memory. In fact, now you can make the move to OS/2 1.3 with as little as two megabytes on your system. What's more, this streamlined version leaves more room for applications and will offer some users a substantial performance increase in many system functions.


OS/2 Presentation Manager will be the
strategic environment that will carry
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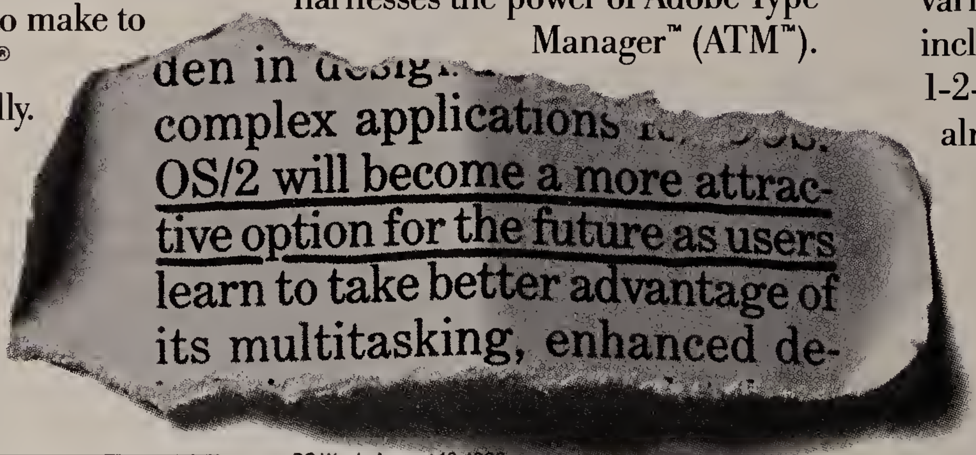
PC Magazine, September 11, 1990

FUNCTIONALITY. FUNCTIONALITY. AND DID WE MENTION FUNCTIONALITY?

Multitasking. Seamless connectivity. The ability to run applications larger than 640K. DOS compatibility. All these features have made OS/2 appealing in the past, but new features have catapulted OS/2 into the here and now.

For instance, now OS/2 1.3 harnesses the power of Adobe Type Manager™ (ATM™).


den in design...
complex applications ...
OS/2 will become a more attrac-
tive option for the future as users
learn to take better advantage of
its multitasking, enhanced de-

PC Week, August 13, 1990

With this new feature, the quality of screen fonts has improved dramatically, giving you a true WYSIWYG capability so what you see is indeed what you get. ATM also gives OS/2 more flexibility in document creation by supporting a wide range of outline fonts.

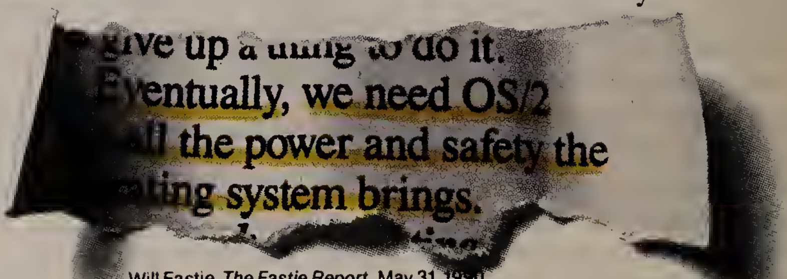
Of course, what good is all this without printer support? Not much. So OS/2 1.3 has improved and expanded its printer support to include drivers for almost all popular printers.

BUSINESS IS BOOMING.

Now that OS/2 is moving forward, so are software developers. Every day, more and more applications are joining the growing pool of available OS/2 software. In fact, a variety of major business programs, including Aldus® PageMaker,® Lotus® 1-2-3/G® and Microsoft® Excel, have already made the transition to OS/2.

These, along with many others, have been redesigned to go beyond DOS memory limits and take advantage of OS/2's intuitive graphical interface—Presentation Manager.™

It's been said that eventually you'll want to take advantage of everything OS/2 has to offer. Well, wait no more because "eventually" is here.


give up a thing to do it.
Eventually, we need OS/2
...ll the power and safety the
...ating system brings.

Will Fastie, *The Fastie Report*, May 31, 1990

For more information on what OS/2 can do for you here and now, or to get details on a no-charge upgrade to Version 1.3, contact your IBM Authorized Remarketer or marketing representative.

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MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USERS GROUPS AND ASSOCIATIONS

Dialogue

What impact will the current economic downturn have on net operations at your company?

"The economic downturn has reduced the size of our budget and forced us to impose a hiring freeze. Our people are working longer hours to accomplish the same or more work, but this is true for most government agencies.

"The downturn is pushing us to further optimize our network to achieve significant cost savings. For example, we will continue to expand our use of virtual services and make sure we are filling our wideband circuits to capacity."

Norm Martin
Director of office telecommunications management
Department of General Services
State of Maryland
Baltimore

"There will be fewer budget dollars available, which affects the types of projects we undertake. Our network and [information systems] projects now must provide a more immediate return on investment. Our payback must be measured in months rather than years. Large, complex projects with a long-term return on investment are being relegated to a lesser priority. As a savings and loan, we've already been hurt financially, and the economic downturn aggravates our situation."

Arthur Hooper
Senior vice-president of IS
John Hanson
Savings & Loan, Inc.
Beltsville, Md.

"We think the economic downturn will increase network usage. Users will be more apt to use the phone than travel because it costs less. For the same reason, we'll see greater reliance on videoconferencing.

"In addition, we expect the company to expand network capabilities that reduce the firm's labor costs. For example, we expect to see greater reliance on imaging and voice processing applications to minimize manual labor operations."

H. Daniel McFarland
Vice-president
and division manager
Security Pacific Automation
Company, Inc.
Glendale, Calif.

"There will be some impact.

(continued on page 25)

As economy sags, interest in leasing, used gear rises

Recession raises awareness of acquisition options.

By Maureen Molloy
Staff Writer

As the economy slides toward a recession, a growing number of users are turning to leased and used equipment as a way to meet network needs while keeping a lid on costs.

Users say a dismal economic forecast has upper management putting even more emphasis on cost containment. Leasing network equipment or purchasing older, used gear — often at less than 50% of the cost of the latest models — can be a painless way to please management while still achieving network objectives.

Leasing equipment or purchasing used gear can be a painless way to please management.

▲▲▲

"The only time it's prudent to choose new network equipment over secondhand [gear] is if the leading-edge technology will give you a significant competitive advantage," said James Miller, manager of information technology at the James River Corp. of Virginia in Richmond, a large manufacturer of paper and related products. "This strategy couldn't be truer when the company is pinching pennies."

Virtually Miller's entire network, from mainframes to modems and multiplexers, comprises leased or used equipment. Miller said leased and used equipment offers a hedge against today's rapid technological obsolescence because short-term leases allow the user to unload obsolete equipment to accommodate newer technologies. But Miller said fear of an impending recession has made leased and used gear even more attractive.

Miller employs what he calls the "slip-stream" strategy, which has enabled his company to enjoy the economic benefits of staying one step behind the leading edge of technology through the use of leased or used equipment.

For example, instead of purchasing a new IBM 3090, Miller bought a slightly older used IBM

(continued on page 25)

GUIDELINES

BY WAYNE ECKERSON

No work force shortage for those with vision

There have been many stories and surveys decrying the shortage of skilled communications workers. But there is another side to the story.

Many experienced voice and data communications professionals are currently out of work and having a difficult time landing a job in the networking industry. Most of these network professionals have been laid off as a result of downsizing and outsourcing decisions or because of mergers and acquisitions.

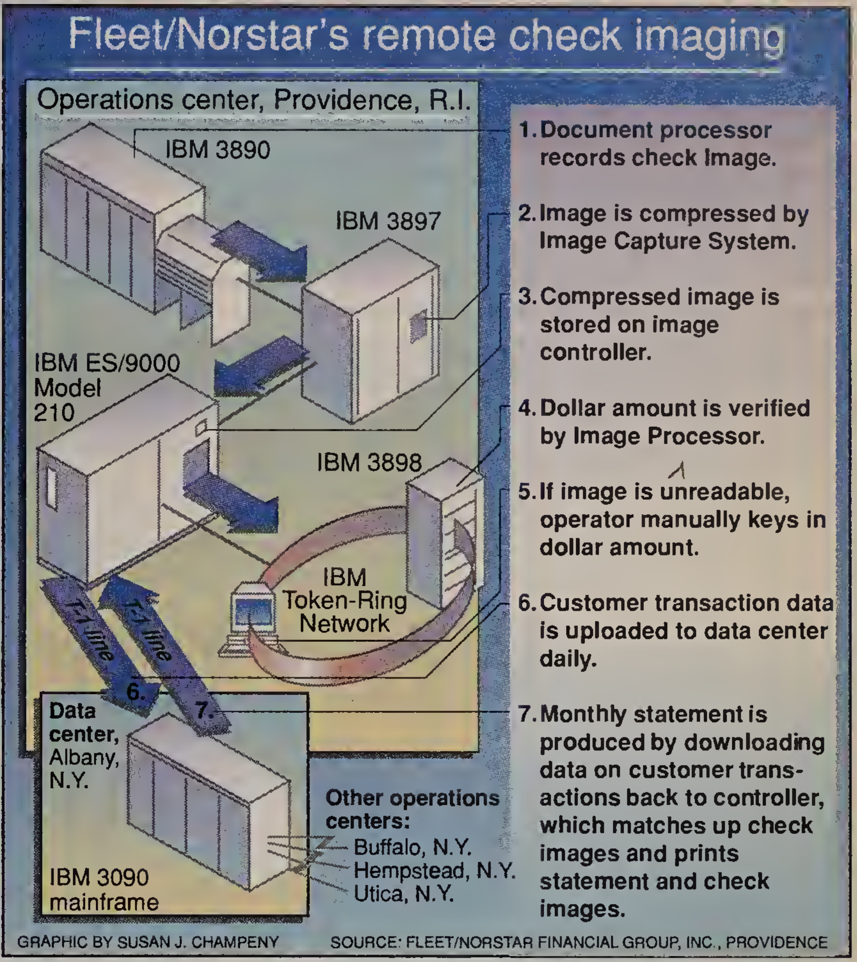
A number of companies are currently overlooking this untapped pool of networking talent because these workers don't have the exact skill sets or experience with emerging technologies that they are seeking.

While many firms may complain about the shortage of skilled network professionals, they may be taking too narrow a view of the employment scene and missing opportunities to hire network professionals who, given some retraining and relocation incentives, could contribute immensely to a company's success.

The rapid pace of technological development has created a host of new networking-related jobs that didn't exist two or three years ago. As a result, companies have been struggling to find people with experience in a host of new technologies, such as videoconferencing, voice processing and local networking.

However, there are few people with these skills, and those that are available come at a hefty price.

(continued on page 24)


Fleet/Norstar's remote check imaging

1. Document processor records check Image.
2. Image is compressed by Image Capture System.
3. Compressed image is stored on image controller.
4. Dollar amount is verified by Image Processor.
5. If image is unreadable, operator manually keys in dollar amount.
6. Customer transaction data is uploaded to data center daily.
7. Monthly statement is produced by downloading data on customer transactions back to controller, which matches up check images and prints statement and check images.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: FLEET/NORSTAR FINANCIAL GROUP, INC., PROVIDENCE

Image net promises big savings for bank

Fleet/Norstar modifies IBM imaging system to serve distributed check processing operations.

By Maureen Molloy
Staff Writer

PROVIDENCE, R.I. — Fleet/Norstar Financial Group, Inc. is installing a multimillion-dollar distributed check imaging system that is expected to significantly reduce the cost of processing the 3.5 million checks that come through its doors each day.

The bank has modified a check imaging system from IBM, which was designed for banks with centralized check clearing, to support its decentralized check processing operations.

"Image processing is the wave of the future in handling the vast amounts of checks and other documents banks deal with daily, and this system is second to none," said Michael Zucchini, executive vice-president and chief information officer of Fleet/Norstar.

Some large banks are reluctant to install check imaging systems because the technology is new and costly. A full-blown imaging system can cost between $2 million and $50 million, depending on the size of a bank's check processing operation. But Fleet/Norstar is forging ahead, Zucchini said, because imaging promises long-term reduction in expenses.

Deployment of the distributed imaging system, which will cost $38 million over a five-year period, is expected to be less expensive than installing a centralized imaging system for check operations. Zucchini said he expects to save $52 million in check processing costs during that five-year period for a net savings of $14 million.

Michael Zucchini

The Fleet/Norstar organization has four remote check processing centers — one here and three in New York — that each support one or more of the nine Fleet banks in the Northeast.

Zucchini worked with IBM to tailor the vendor's ImagePlus High Performance Transaction System (HPTS) to fit Fleet/Norstar's distributed approach.

The original HPTS was not suitable for remote check processing because large amounts of data were generated for each

(continued on page 24)

Image net promises big savings for bank

continued from page 23

check processed. High-speed transmission of that data from remote sites to an IBM 3090 mainframe in the central data center in Albany, N.Y., would have required a tenfold increase in network capacity.

Each of the four branches will be a self-contained image processing site equipped with an IBM ES/9000 mainframe, an IBM 3890 document processor, an IBM 3897 Image Capture System and an IBM 3898 Image Processor. The recently introduced ES/9000 Model 210 is a mid-range, air-cooled member of the ES/9000 line. The ES/9000s will be supported by technicians at the bank's main data center.

The 3890 document processor, which is equipped with an image camera that processes 2,400 checks per minute, converts paper checks into an electronic image and feeds it into the image capture system. The capture system then compresses the image and sends it to the ES/9000.

> "Our approach will provide a healthy dose of productivity to the mindless effort of paper pushing," Zucchini said.
>
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The ES/9000, specifically configured for remote processing, will act as an image processing controller supporting image storage and printing, among other HPTS functions. It will transmit to the Albany data center, via a T-1 link, only the data required for transaction processing and accounting.

Customer account updates will be posted daily at the Albany processing center and sent back to the remote site, where the image controller will match account information with local check images to print monthly statements for customers.

Zucchini said one feature that sets the new system apart from other IBM imaging systems under development is its ability to read handwritten check amounts. Those that cannot be read electronically can be keyed in to the system manually using IBM Personal System/2 workstations connected on an IBM Token-Ring Network.

Since Fleet/Norstar is expected to be the first U.S. bank to implement a distributed check imaging system, it is working with IBM to build a prototype of a remote imaging system at its data center in Albany.

The first installation at a regional processing center will be at the bank's Providence site, which handles 1.2 million checks a day. That system is expected to be fully operational by the end of next year. Fleet/Norstar will then expand the system to its sites in Buffalo, Hempstead and Utica, N.Y., by the end of 1992.

"Our approach will provide a healthy dose of productivity to the mindless effort of paper pushing," Zucchini said. "We'll be able to improve the quality of customer service by reducing the manual-intensive component of processing checks." ◘

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No shortage for those with vision

continued from page 23

Some companies are looking to fill the posts with college graduates who have studied the new technologies in the classroom and laboratory.

While these people may know how to design a voice processing system or debug a network, they often lack the basic business and interpersonal skills of many older professionals.

Because older professionals are familiar with the fundamentals of communications technology and speak the jargon, they can be quick studies of new technologies. Given some additional training, they only need a month or two before they can pull their weight in the technology trenches.

More importantly, since network shops are under increasing pressure to develop applications and systems that meet end-user needs and reflect corporate strategy, it is increasingly imperative that companies hire network professionals who have business savvy as well as interpersonal skills.

Network professionals at all levels should understand the nature of their company's business, be able to communicate effectively with end users and senior executives, and know how to negotiate and maintain beneficial vendor relationships.

These are soft skills that can't be learned from books but take several years of experience to hone and perfect. Net professionals who have these skills have a better chance of succeeding in the long run and providing significant returns to the company than those who come with just exquisitely polished technical skills.

Companies should broaden their hiring horizons and consider employing network professionals more for their business sense and experience than for their specific technological expertise.

Once companies do this, they will realize that, far from a shortage, there is an abundant pool of qualified net professionals on the market today. ◘

Interest in used gear rises

continued from page 23

3084. While the 3090 offered some technical advantages, the processing capacity of the two machines is almost identical, he said. And the company saved more than 50% off the price of the 3090.

Phillip Evans, telecommunications director at FMC Corp. in Dallas, said threats of a recession have caused him to scrutinize more closely the used equipment market.

"There are good buys to be had in the refurbishing market and areas where I can save on networking costs without harming performance," Evans noted.

Woody Randall, vice-president of communications for Citizens & Southern National Bank of South Carolina, leases new equipment and purchases used equipment from Comdisco, Inc. and AT&T Systems Leasing.

That helps him avoid getting locked into a technology. He said operating leases are preferable to outright purchases when a company is facing tough times because they allow costs to be spread out over a period of years.

Leasing also reduces the number of employees needed to acquire and dispose of equipment, since the lessor typically takes care of both tasks. This is all the more important as companies try to hold staff levels to a minimum, he said.

Kenneth Halverson, executive vice-president of Comdisco, the largest independent lessor and remarketer of high-tech equipment, said his company has seen an increase in clients looking for used network equipment over the past three months.

"As the economy gets tight, companies search frantically for ways to save money," he said. "Leasing or buying used equipment is a cost-saving alternative while companies wait for the economy or their own fortunes to recover."

He said his company recently acquired as a client a large U.S. oil company that had never before considered leasing equipment. Another new client was ordered by its executive management to buy used very small aperture terminals for one of its divisions rather than invest in new equipment.

Connie Jordan, product manager at AT&T Systems Leasing, a subsidiary of AT&T Capital Corp., said sales of refurbished equipment are expanding as the economy becomes more constricted.

"Some users realize they don't need to have the latest and greatest if the [equipment's] greater capabilities don't justify the greater cost," she said. "When money is a key consideration and you find you could buy 10 used communications controllers at $100,000 less than 10 new ones, the user will consider very carefully whether the added performance is critical to the net."

In the IBM market, it's usually possible to acquire used hardware within six months of its new release date. It's also not uncommon for used equipment to sell for less than 50% of its original price only one or two years after being introduced.

These savings are especially attractive to users whose applications can be supported by systems that are more than one generation old. Jack Wierzbicki, manager of technical support at Pep Boys, an automotive retailer in Philadelphia, is one such user. He bought a used IBM 3090 for 51% off the list price.

"You're talking about a $3.2 million piece of equipment. That's a huge savings that doesn't harm our performance the way cutting staff might," he said. ◻

Dialogue

continued from page 23

"It may slow down the rate at which we implement new releases and enhancements to our networking products, and we may be slower to purchase and adopt new technologies.

"It's likely that we will not be able to increase our network support staff for the next year or two. Also, we've already identified cuts of up to 6% in our base operating budget that we may have to take if the economic situation continues to get worse."

Steve Davidson
Chief of computer operations
Prince William County
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INTERNATIONAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

World News

AT&T and the German carrier **Deutsche Bundespost Telekom** recently announced plans to deploy in late 1992 or early 1993 a submarine fiber cable that will connect the U.S. mainland to Germany.

According to AT&T, the new cable, Trans-Atlantic Telecommunications-Germany-1 (TAT-G-1), will be the first fiber cable to connect the two countries.

An AT&T spokesman said the new cable will probably contain two active fiber pairs running at 560M bit/sec and will use existing electrical repeater technology rather than the newer optical amplification technology that AT&T plans to begin using on submarine fiber cables after 1996.

The AT&T spokesman said the cable is needed to support rising traffic volumes.

He said AT&T carried a total of 596 million minutes of telephone traffic between the U.S. and Germany last year, up from 198 million minutes in 1982.

The **European Investment Bank** recently announced a 15-year loan of 80 million European Currency Units ($110 million U.S.) to the Hungarian carrier **Magyar Tavkozlesi Vallalat** to upgrade and extend its national telecommunications system.

The loan will finance the first phase of a 10-year modernization program aimed at bringing Hungary's public network up to par with the public nets operated by the European Community. ■

INMARSAT's new satellites to offer increased capacity

Launches first of new series; three more to come.

By Barton Crockett
Senior Editor

LONDON — The International Maritime Satellite Organization (INMARSAT) recently launched the first of four satellites that will vastly increase the capacity of the INMARSAT system and help support new services expected to debut over the next few years.

The INMARSAT-2 series of satellites will more than quadruple INMARSAT's transmission capacity and enable the international satellite organization to support mobile telephone services and data communications services at speeds up to 2.4K bit/sec.

"The system we have now is pretty much loaded," said an INMARSAT spokesman at the organization's headquarters here. "INMARSAT-2 will help us cope with demand well into the 21st century."

INMARSAT, a global organization with representatives from 62 countries, operates an international satellite system used to provide mobile communications services to ships, airplanes and land vehicles.

Satellite territories

According to the spokesman, the first of the INMARSAT-2 satellites, which collectively are valued at $610 million, was launched on Oct. 30 and is now drifting into position over the Indian Ocean. It is expected to occupy a geostationary orbit there and begin providing services in and around Southeast Asia and Australia in December.

The second satellite is expected to be launched in February and serve the Eastern U.S., South America, Africa and Europe. The third should go up next July to serve the Pacific Rim, and the fourth is expected to be launched in November 1991 to serve the continental U.S. as well as Western Europe.

The four INMARSAT-2 satellites will be more powerful and have greater capacity than the existing INMARSAT system, which is based on a potpourri of satellite capacity leased from the Communications Satellite Corp. in Washington, D.C., the European Space Agency and the International Telecommunications Satellite Organization.

According to the spokesman, each of the INMARSAT-2 satellites will have capacity equivalent to about 250 simultaneous voice-grade analog circuits. By contrast, the most powerful of the existing INMARSAT satellites can only support about 60 simultaneous voice-grade circuits, and the current system as a whole supports no more than 200 analog voice circuits.

In addition to increasing capacity, the new satellites will beam down stronger signals, which will enable users to deploy smaller earth stations to use INMARSAT services. This extra power will enable INMARSAT to offer its INMARSAT M service, slated for introduction in 1992.

INMARSAT M will support data communications at speeds up to 2,400 bit/sec and mobile voice communications terminating either at INMARSAT earth stations or in the public switched telephone network.

These services will be supported by briefcase-sized earth stations that can be mounted on ships, airplanes or trucks, or even carried by hand, the spokesman said.

Currently, INMARSAT only offers store-and-forward data communications services at rates up to 600 bit/sec. ■

U.S.-to-Moscow private digital links

Digital satellite services offered by IDB International, linking the U.S. and Moscow

Data or voice/ fax service	Cost	Moscow local loop charge	Available
9.6K bit/sec	$5,000 to $6,000 per month for equipment and services, depending on contract length	$300 to $400 per month	Since July 1990
64K bit/sec	$15,800 to $18,000 per month, depending on contract length	$2,700 monthly (digital microwave link)	Since September 1989
64K to 2.048M bit/sec	Not available	Not available	On demand

Service in other parts of the Soviet Union would initially be provided by IDB via an on-premises VSAT.

GRAPHIC BY SUSAN J. CHAMPENY   SOURCE: IDB INTERNATIONAL, ROCKVILLE, MD.

IDB gives U.S. users private Soviet links

USSR works with IDB unit to provide U.S. firms with private-line connections to their Soviet offices.

By Ellen Messmer
Washington Correspondent

MOSCOW — As U.S. companies begin to pursue business opportunities in the Soviet Union, they are finding reliable communications services to be in as short supply as other Russian goods.

But in the spirit of glasnost — and with an eye toward bringing in some hard currency — the Soviet Ministry of Communications is cooperating with Rockville, Md.-based IDB International, a division of IDB Communications Group, Inc., to bring international digital private-line services directly to the Moscow premises of U.S. firms.

International calling has traditionally been a luxury in the Soviet Union, unavailable to the typical Soviet citizen or business. International calls, which foreigners must pay for in hard currency, are also a cash cow for the Soviets. But a severe shortage of Soviet network capacity has made it difficult for Soviet telecommunications authorities to handle international traffic.

The USSR maintains only 35 trunk lines from Moscow to the U.S., according to Bill Wisniewski, senior director of business development for IDB International. "The switch was clogged with all of that traffic," he said.

IDB International discovered that news organizations were spending upward of $40,000 per month calling home offices through the public switched network because once a call was established, reporters were forced to keep a line open for days in case the connection could not be reestablished.

But a joint venture between IDB International and the Soviet telecommunications administration to offer 64K bit/sec and 9.6K bit/sec digital private-line services is beginning to alleviate the logjam and cut the cost of calling abroad (see graphic, this page).

The Soviet telecommunications administration, in an un-

(continued on page 28)

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IDB gives private Soviet links

continued from page 27

precedented display of cooperation in delivering telecommunications services, is allowing IDB International to mediate among the fractious Soviet local, long-distance and international telecommunications agencies to provide one-stop shopping to U.S. companies conducting business in Moscow. IDB International acts as a referee for satellite carrier Cosmicheskaia Sviaz (CCS), long-distance carrier Glavnyi Centr Upravleniy (GCU) and the local carrier Moskovskaya Gorodskaya Telefonnaya Sect (MGTS) in order to guarantee customers that service will be provided in a time frame of between 90 and 120 days.

Jeffrey Singman, communications manager for NBC News, said IDB International met that deadline when it turned on 64K bit/sec private-line service for NBC's Moscow news bureau last September.

"Our communication has greatly improved because we now have four lines constantly open, which makes it easier to gather news," Singman said.

Among the array of news-gathering organizations that now subscribe to IDB International's private-line services are CNN, CBS, The Associated Press, the *Washington Post, Newsweek, Newsday* and *Business Week*.

IDB International now has full-time bilingual personnel in Moscow installing customer equipment and troubleshooting. No other international communications company has been able to duplicate IDB International's close relationship with the Soviet authorities that dates back to 1987, when IDB Communications Group's Broadcast Division handled a Billy Joel concert.

"It was the first time a commercial company was allowed to bring in a transportable VSAT 1.8-meter antenna," Wisniewski said.

IDB International's success in supplying video and voice services for the White House press corps and the news media during the historic May 1988 Gorbachev-Reagan summit led IDB International to propose a full-time operating agreement with the Soviets, which was concluded in September 1988.

At the Soviet satellite teleport at Bear Lake, outside Moscow, a mixture of Soviet and U.S. equipment handles inbound and outbound international traffic.

"We worked with the administration to combine their antennas with specialized multiplexers for up/down connection," Wisniewski said.

"IDB gave them a quarter of a million [dollars] in equipment, but we have an arrangement to get it back over time," he said.

Other U.S. telecommunications companies, confident that the Soviet marketplace offers future growth, are also entering into joint ventures with the Soviets. US West International, Inc., a subsidiary of US West, Inc., last October signed a contract with Leningrad authorities to build a cellular network in that city. With an investment of $6 million from US West, cellular service is planned for 1991.

US Sprint Communications Co. has established Sprint Networks USSR, a joint venture with the telegraph arm of the Soviet Ministry of Communications, to operate an international gateway in Moscow. It is expected to be operational by year end.

In the long run, US Sprint plans to provide Sprint Mail Message Service throughout the Soviet Union and internationally as a private packet network service. Foreigners will pay in dollars, while Soviets will pay in rubles.

AT&T, which provides 9.6K bit/sec analog private-line service to the Soviet Union, last October sold a 5ESS switch to Armenia. An AT&T spokesman acknowledged that the company is interested in pursuing additional business with the Soviets.

"Every phone company is trying to get into the Soviet market," he said.

U.S. involvement in Russian telecommunications goes way back, the spokesman said. In 1876, Alexander Graham Bell held a franchise that made AT&T the local phone company in Moscow and St. Petersburg, now Leningrad. The franchise expired in 1901.

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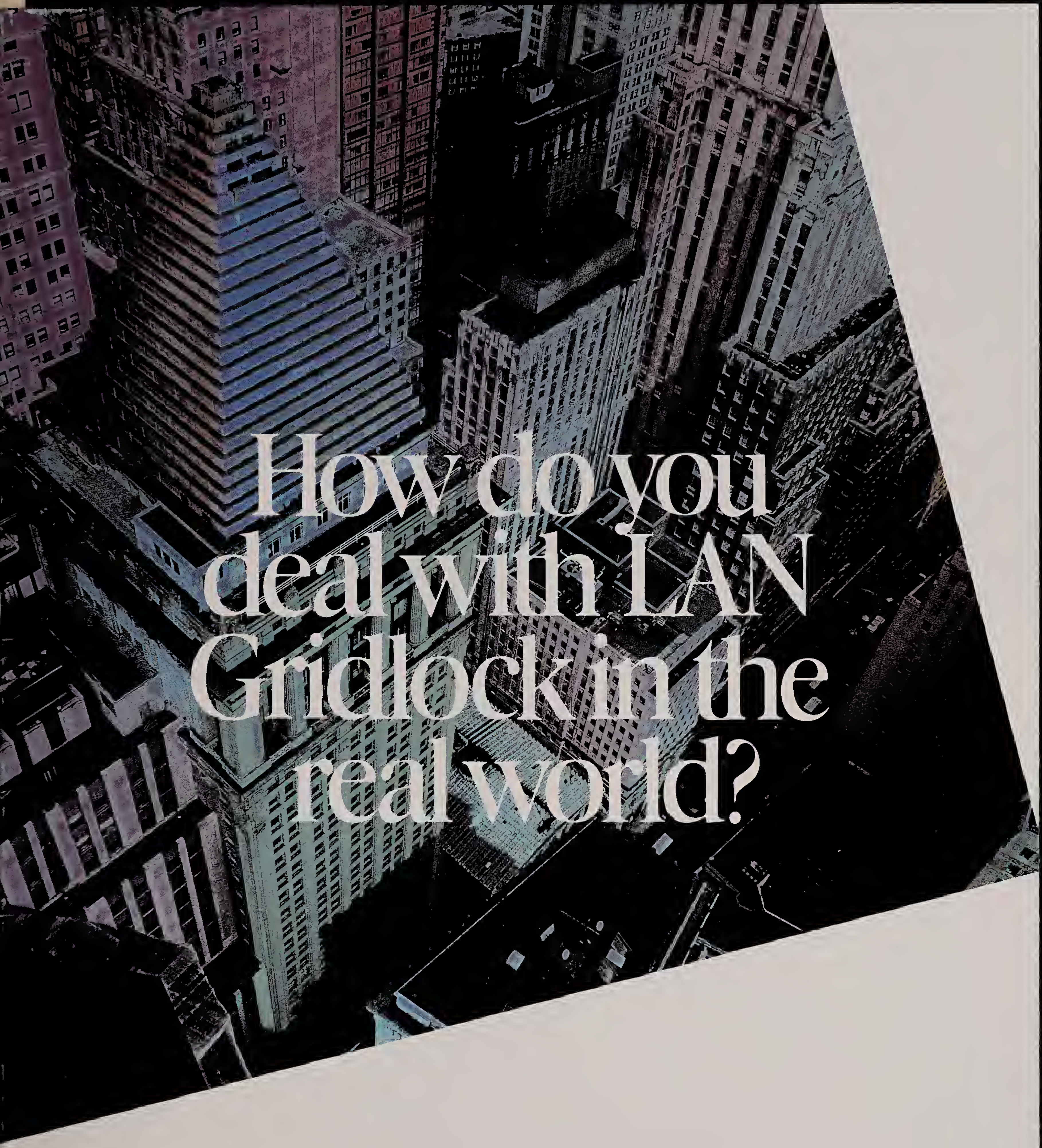
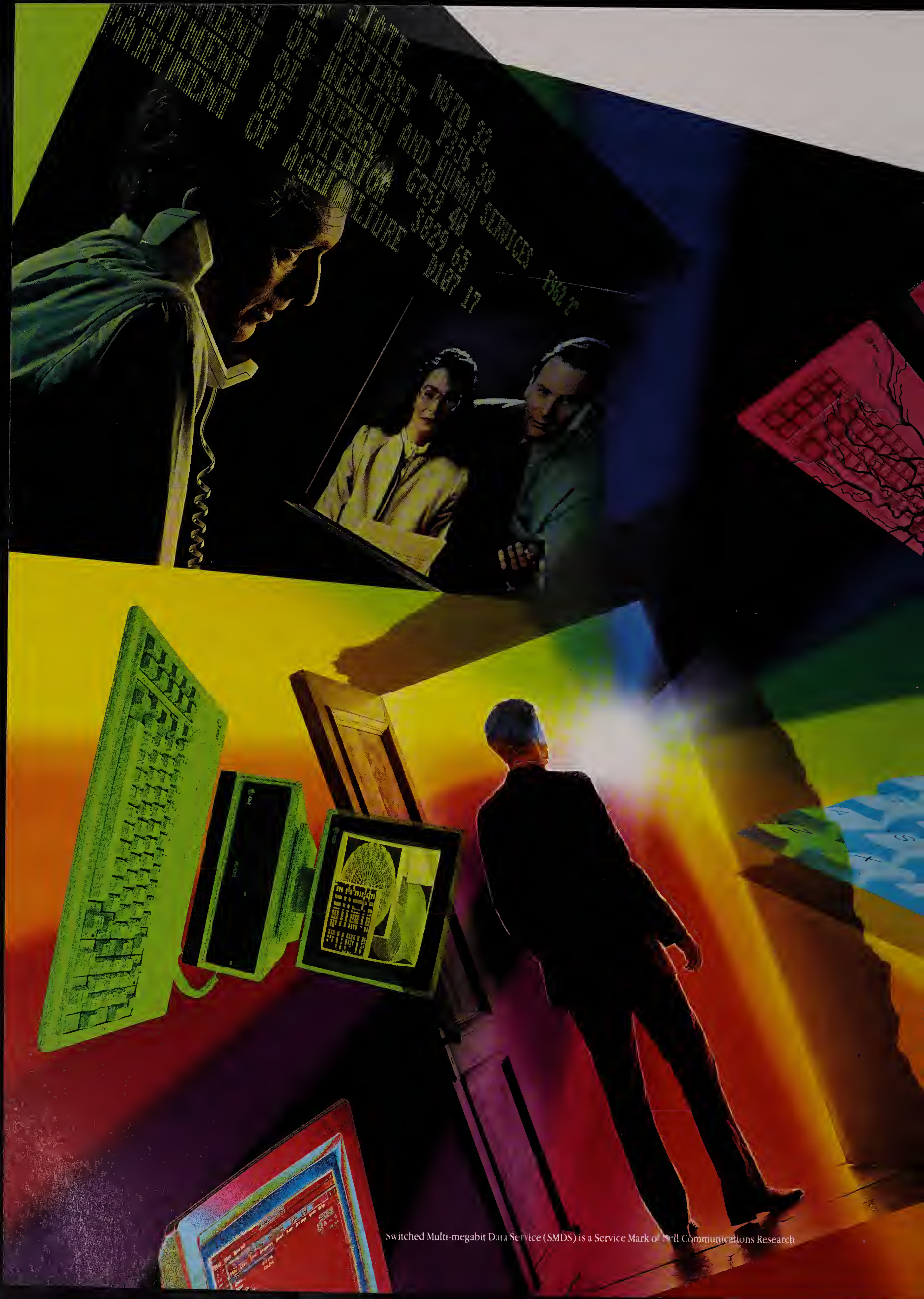

How do you deal with LAN Gridlock in the real world?



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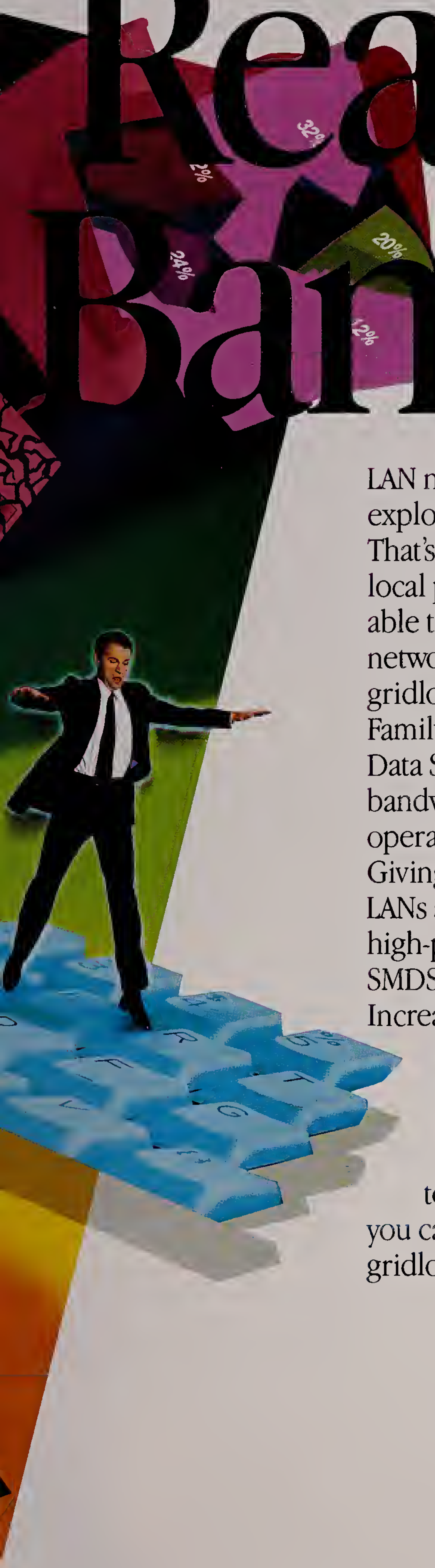

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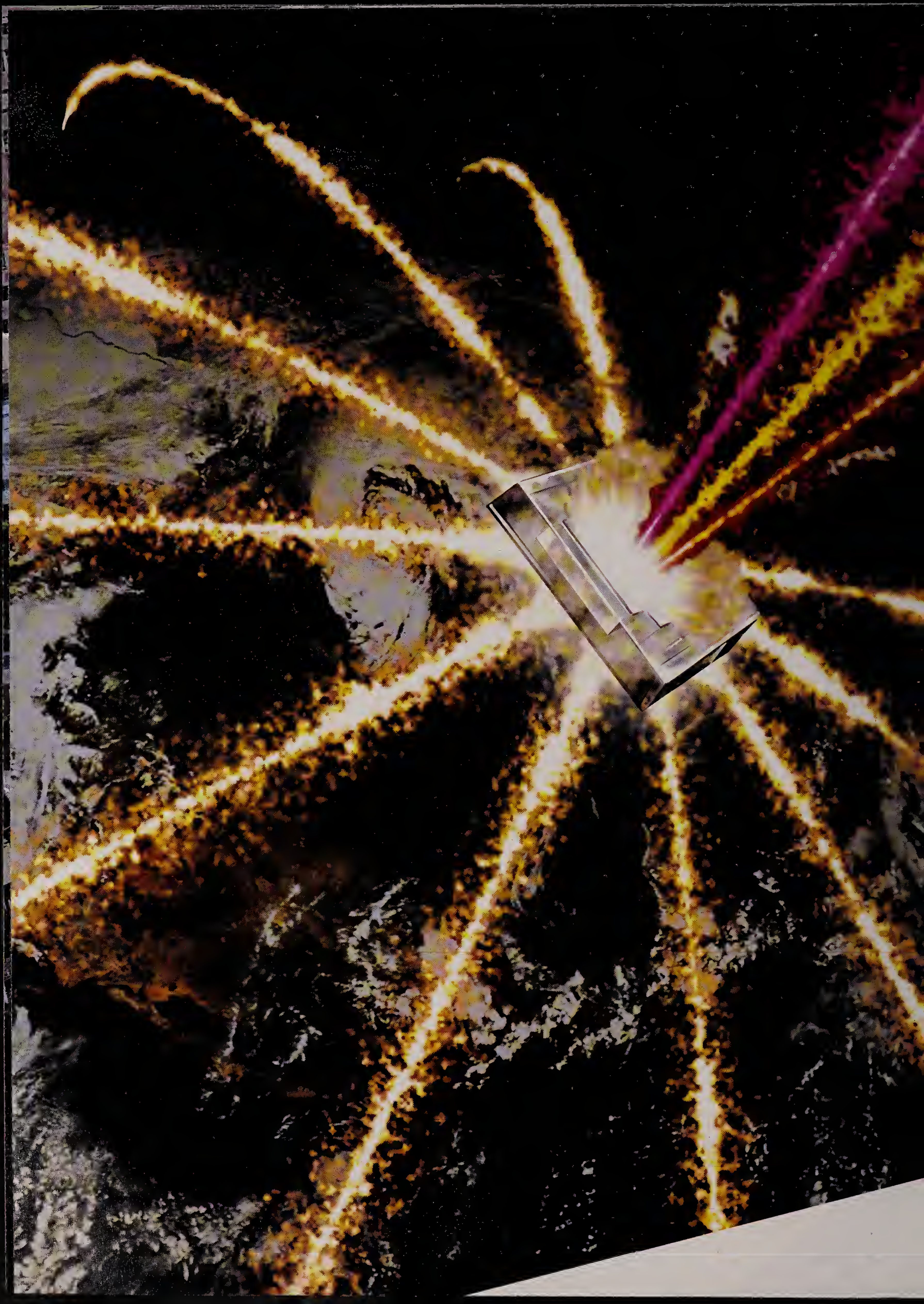

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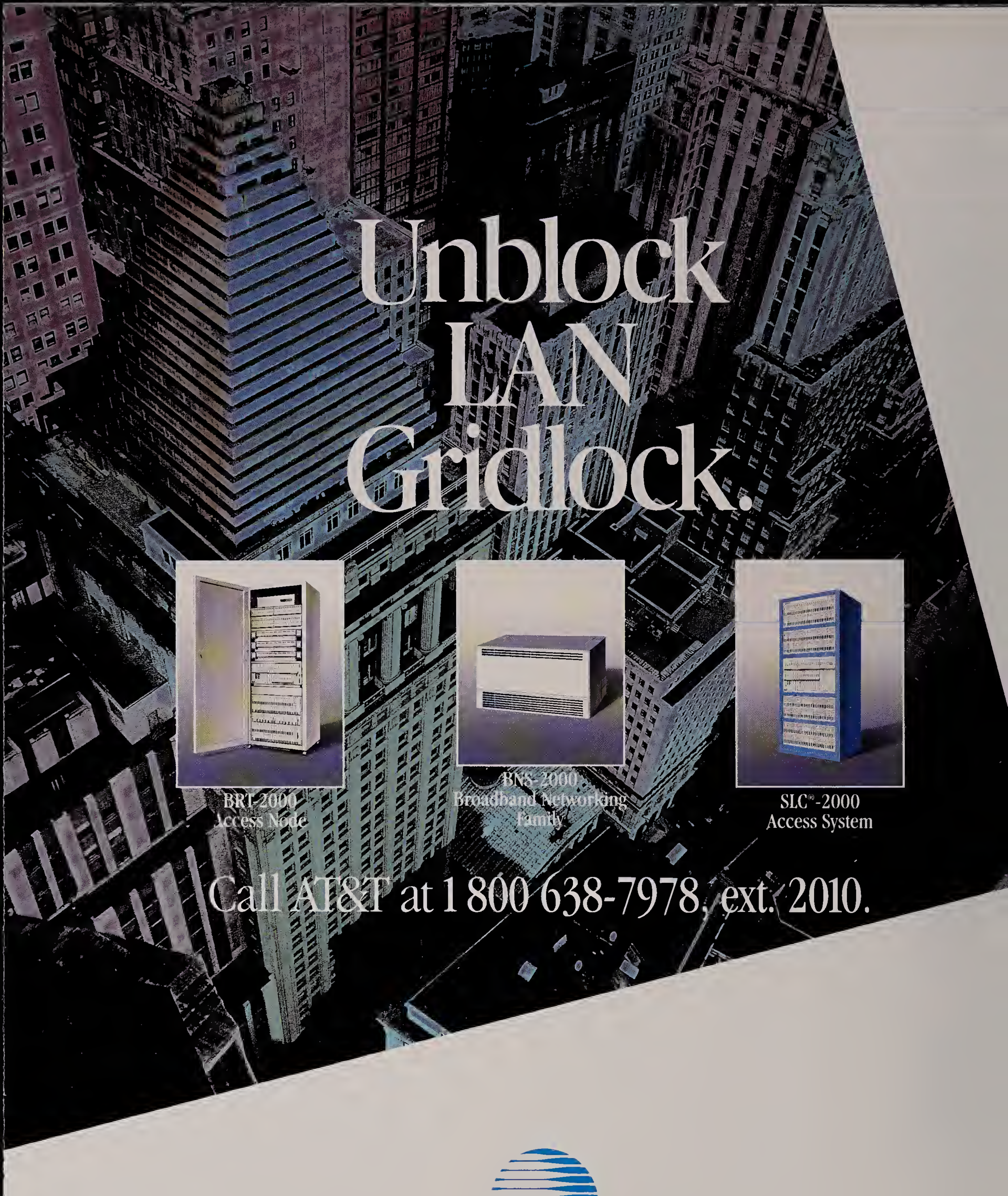
Service Net-2000

AT&T
Network Systems



AT&T
Network Systems

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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Software lets graphics PCs emulate X Window

AGE recently announced X Window System software that enables DOS-based Intel Corp. 80286 or 80386 personal computers with Texas Instruments, Inc. TMS340 graphics accelerators to emulate X Window terminals.

AGE enhanced the performance of its **XoftWare for TIGA/DOS** Version 1.2 by reworking the software's interface to an Open Software Foundation Motif window manager and streamlining the operation of embedded Transmission Control Protocol software. The company also added the latest release of FTP Corp.'s PC/TCP software, Version 2.04, and said the software now supports 64-bit cursor shapes.

AGE has tailored the software to take advantage of the performance benefits of graphics accelerators that use the TMS340 microprocessor. For instance, fast drawing speed is assured because all X Server functions are executed on the TMS340 chip.

XoftWare for TIGA/DOS Version 1.2 costs $495 per node. It is available now.

AGE, 8765 Aero Drive, Suite 226, San Diego, Calif. 92123; (619) 565-7373.

Hilgraeve unveils remote HyperACCESS/5 features

Hilgraeve, Inc. recently added remote access features to its **HyperACCESS/5** software for DOS and OS/2 personal computers.

Version 2.0 of the software also comes with comprehensive V.42 modem support, script language enhancements and memory management features.

Personal computers supporting Version 2.0 can be configured to accept calls from remote users. The software can be programmed to grant callers file transfer, file management, electronic mail and directory privileges.

HyperACCESS/5 Version 2.0 for DOS costs $99.95; HyperACCESS/5 Version 2.0 for DOS and OS/2 costs $199. Both are available now.

Hilgraeve, Inc., Genesis Centre, 111 Conant Ave., Suite A, Monroe, Mich. 48161; (313) 243-0576.

DEC rolls out new links for Rdb/VMS

MAYNARD, Mass. — Digital Equipment Corp. recently announced products designed to extend the functionality of its Rdb/VMS relational data base management system product in multivendor net environments.

The products extend the interoperability features of Rdb/VMS, enabling users for the first time to access Oracle Corp. data bases. They also provide services for migrating other data base environments to Rdb/VMS.

The new interoperability products include two RdbAccess offerings: RdbAccess for Oracle and RdbAccess for VAX RMS.

RdbAccess for Oracle is an Rdb/VMS SQL gateway that provides read-only access to Oracle data bases running on DEC VAX/VMS systems. Applications using the gateway must be developed using systems such as VAX Rally, VAX Datatrieve, VAX Teamdata and DECdecision.

RdbAccess for Oracle is available now and ranges in price from $1,130 to $47,100, depending on the configuration of the customer's network.

The other gateway, RdbAccess for VAX RMS, is an SQL gateway providing direct read access to data stored as DEC RMS or IBM VSAM files.

The product comprises two components, the Non-SQL Data Server, which brings data and its definitions together and makes them appear relational, and the VAX RMS Driver, which contains the code needed to access RMS files and IBM MVS data sets.

RdbAccess for VAX RMS is scheduled to be available in March and will range in price from $900 to $37,860.

Together, the new and existing RdbAccess products will provide a standard Rdb/VMS interface to IBM's DB2, VSAM and RMS files, in addition to Oracle data bases, allowing data to be accessed from a single application, DEC reported.

Also, with Version 2.2 of the VAX Data Distributor, which was concurrently announced, DEC users can automatically transfer and consolidate data from Oracle, DB2, VSAM, Rdb/VMS and RMS data bases to Rdb/VMS data bases, creating data warehouses, DEC said.

The latest version of the VAX Data Distributor is available now and costs from $930 to $59,761.

The company rolled out Rdb Migration, a collection of tools and services customers can use to move from their existing data bases to Rdb/VMS data bases.

The initial migration service will enable users to convert Oracle data bases to Rdb and will include data conversion tools, data base optimization and training.

The services will be offered through DEC's Center for Migration Services in Colorado Springs.

Firm offers 4-port access control security module

CAMBRIDGE, Mass. — Security Dynamics, Inc. (SDI) recently announced a multilevel access control security device designed to safeguard the usage of as many as four terminals.

The ACM/400, like SDI's other access control module, uses a two-factor authentication process that combines a personal identification number (PIN) with SDI's SecurID Card. The credit card-sized SecurID Card generates pseudorandom numbers used in the ID process.

The ACM/400 has eight RS-232 ports and can be used to link four asynchronous terminals to four RS-232-compatible devices such as computers or modems.

The ACM/400 and the SecurID Card employ a patented, proprietary technology based on a time-synchronized algorithm that produces a onetime, unique, unpredictable access code that automatically changes every 60 seconds, the company said.

When ACM/400 is in use, customers turn on their terminals and are greeted with an ACM/400-generated prompt requesting the input of a PIN followed by the number that is displayed at on their personal SecurID card.

The ACM/400 keeps a record of card accounts. It first verifies the PIN and, if it is valid, uses the same algorithm as the card to generate its own pseudorandom number. If the numbers match, access is granted.

The access module is a smaller version of the ACM/1600, which is a 16-line, 400-user device.

The ACM/400 costs $3,800, and SecurID cards that last for an estimated three years cost roughly $40. Both products are available now.

SDI can be reached by writing to 1 Alewife Center, Cambridge, Mass. 02140, or by calling (617) 354-8836.

ASK offers EDI pack for auto suppliers

Software supports transfer of purchase orders, shipment notices to streamline supply channel.

DETROIT — ASK Computer Systems, Inc. recently announced electronic data interchange software that automatically hands off EDI purchase orders to the firm's Manman production management software.

Unveiled here at Autofact '90, the company's Manman/Automotive software promises to help users cut order processing costs and improve communications with customers operating in a just-in-time environment.

Rather than maintaining a separate order entry network, Manman/Automotive picks up customer orders from an electronic mailbox and routes the data directly to a company's production network running Manman software modules that support production planning and accounting functions.

Consequently, the EDI orders kick off raw materials ordering, production scheduling and automatic shipment notices to customers, said John Valencia, manager of product marketing.

"Automotive suppliers are obliged to meet the EDI and release accounting requirements as specified by their automotive customers," Valencia said. "The intention with this product is to let an automotive supplier become more responsive to customers."

Manman/Automotive is software that runs on Digital Equipment Corp. VAX or Hewlett-Packard Co. HP 3000 minicomputers also running ASK's Manman/Mfg production scheduling and Manman/OMAR order management software. Manman/Automotive supports ANSI X.12, EDI for Administration, Commerce and Transport (EDIFACT), as well as Transportation Data Coordinating Committee and proprietary EDI formats.

The package is capable of accessing a variety of public E-mail networks and retrieving automotive "raw, fab and cum" orders left by an automaker's purchasing agent in an E-mail box. Those orders are specific EDI transactions that inform a supplier about how much raw material will be needed for a batch order, how many parts the customer wants delivered and the number of cumulative purchase orders used by accounting for billback.

Using Manman/Automotive, those EDI transactions are downloaded into other Manman modules, where they automatically kick off raw materials purchase orders, draw up shop-floor production schedules to fulfill the order and enable accounting departments to mail advance shipment notices instructing customers when a delivery is scheduled to arrive.

"The intention here is to let the customer know exactly when the parts are coming down the line so he can adjust his production schedules," Valencia said.

"We see a number of large automotive component suppliers that have migrated to these environments because they cut costs, improve quality and foster better client relations in the long run," Valencia said. During the next 18 months, he added, ASK expects other industries will look to integrate orders via EDI into production scheduling systems.

Valencia said ASK acquired EDI software from Trinary Systems, Inc., a Detroit EDI software house, because it supported a number of EDI formats required by the Automotive Industry Action Group that other third parties did not.

> "The intention is to let an automotive supplier be responsive to customers."
>
> ▲▲▲

"We are satisified that Trinary can cover any EDI transaction set used in the auto industry," Valencia said.

ASK will sell Manman/Automotive through Electronic Data Systems Corp. (EDS), which recently bought a 20% stake in the software company. EDS will market the software to manufacturers it has signed to outsourcing or integration contracts.

A version of Manman/Automotive for the DEC VAX is scheduled to ship by year end, and the HP 3000 version will be available in the second quarter of next year, Valencia said. Pricing ranges from $10,000 to $75,000, depending on configuration.

ASK can be reached by writing to 2440 W. El Camino Real, Mountain View, Calif. 94040, or by calling (415) 335-5488.

THE SKILLS SHORTAGE

BY DONALD KIMBERLIN

Some tips for skilled telecom job hunters

Here's some advice gleaned from my attempts to help unemployed, skilled telecommunications workers find jobs over the past several years. It may shock job seekers.

■ **Don't bother answering blind box ads.** Firms that place such ads in the general press virtually never acknowledge that they've received your resume or identify themselves in any way.

■ **Advertisements that ask for salary history are probably useless.** By the time a company's personnel department receives the hiring requisition, the salary for the position has been firmly set. Ads that demand a salary history are usually used only as a weeding-out device.

■ **Age biases and discrimination are rampant.** Acquiring the skills needed today takes many years, which almost always makes skilled telecommunications professionals senior employees. And if you are one minute older than your prospective boss, that's a threat.

■ **Telecommunications is corporate America's most highly politicized hot potato.** The telecommunications departments in many companies are in such a mess that no corporate official wants the responsibility for untangling them. Many job requisitions go unfilled — deliberately — until the responsible senior manager can shirk the responsibility totally.

> You can measure your chances by seeing if the boss has a personal computer.
>
> ▲▲▲

■ **Most corporate managers in the U.S. are "technophobic."** You can measure your chances pretty directly by seeing if the prospective boss has a personal computer, if it's networked and, if so, if it ever gets powered up. If you find no personal computer or one that never gets used, you know you're in a place where technology is being pushed back.

■ **Hiring is a political process in many corporations.** Many managers know exactly who they want to hire even before they put the requisition into the personnel work hopper. That's months before your resume shows up. What's it for, then? It's only for political effect, simply to show how widely they looked and how hard they scoured the marketplace to "find" only one suitable applicant, the one they chose months before in a lunch meeting.

Yes, it's a grim picture. What can one do? Make the most of what works — influence.

If it's really very unlikely you'll ever get a job through the front door, use all the back door tricks you can find. Social contacts, publicity that draws attention, professional association meetings, any of those "lunch meetings" you can get and recruiters who have influence, most often directly into the hiring manager, are all helpful.

Recruiters who send resumes to personnel departments are often unknowing dupes of the special politics of getting a telecommunications job.

It's no small secret that a large portion of the consultants out here would rather not be consultants. One fairly frequent way they get hired is to consult for the company until the manager decides it's less expensive to hire them as full-time employees. And hire the consultant they do, ahead of the line that formed down in the personnel office.

So brace yourself and pull up your socks. If you have an alternative, like buying into a franchise with some payoff or nest egg, consider it. It may be less risky than spending months with no income while trying to get work. ◘

Kimberlin is a principal consultant at Telecommunications Network Architects in Safety Harbor, Fla

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EDITORIAL

A return to the old virtues: a celebration of excellence

Like a child lost in a forest, U.S. industry has been trying to find its way back to excellence during the last decade or so. But there is no quick or easy path.

Honors for excellence have long existed in sports, the arts and the sciences. Only recently have they been awarded in business.

SIXTH ANNUAL
User
Excellence
Awards

Network World's annual User Excellence Awards are now acknowledged as the most notable mark of achievement in the design and construction of information networks. The cowinners of this year's award are examples of particularly significant trends.

Note the wholly owned microwave network of the First National Bank of Maryland. A few years back, granting an award to this pure bypass network might have been controversial. "Bypass" was once a dirty word. Carriers did their best to hush up successful examples of bypass, arguing that it didn't save as much money as it should have.

It must have taken some courage for the bank to build a bypass network in the face of such hostility. But the success of First National's net flatly disproves carriers' propaganda. Since it was installed, the bank has reduced total per-minute expenses by 33%, from 32.5 cents to 21.7 cents. Some bigger nets offer greater savings, but the reduction is significant.

American Airlines, Inc.'s achievement has many facets. The award was given to American Airlines Decision Technologies, Inc., an American subsidiary set up to implement innovative network technologies. That subsidiary's latest innovation is called Qantas Intelligent Keypad Reservation System (QIK RES), a local-area network-based front end to American's well-known reservation network, SABRE.

QIK RES simplifies the reservation business by handling many of the commands that agents previously had to memorize. It also serves as a way of toggling between different computer systems. Finally, it's a kind of client/server software structure that has helped American move quickly from its old terminals to Intel Corp. 80386-based IBM Personal Computers hung on token rings.

But let us also praise the honorable mentions, whose achievements are outstanding as well. And such diversity: Allegheny Ludlum Corp.'s #9 Maintenance Division, American Management Systems, Inc., K mart Corp., the University of California, San Diego and Edward D. Jones & Co.

Each is an example of foresight, hard work and innovation — in short, excellence. ◘

OPINIONS

ENGINEERING LICENSES

BY DANIEL MCDEVITT

All net consultants practice engineering without a license

Most states have enacted a standard statute for the registration of engineers that makes practicing engineering without a license a misdemeanor, punishable by as much as a year in jail and a $500 fine.

Most state engineering acts define the practice of engineering, in part, as "any service or creative work, the adequate performance of which requires engineering education, training and experience in the application of special knowledge of the mathematical, physical and engineering sciences to such services or creative work as consultation, investigation, evaluation, planning and design of engineering works and systems."

Is there a communications or computer consulting assignment that does not include a building, equipment, system, utility or machine?

Can there be any doubt that anyone without an engineering license who is consulting or offering to consult in communications, computers, control or network systems applications is in violation of these engineering registration laws?

Telecommunications engineering does not differ from other kinds of engineering under most state laws.

And even though telecommunications is interstate by nature, the states' role is confirmed under the U.S. Constitution. Even the Federal Communications Commission must bow to the states on all but interstate regulations.

Now Novell, Inc. is usurping the policing power of the states by registering Certified NetWare Engineers. And all of the major accounting firms offer computer-assisted software engineering services.

Should any consultant practicing engineering without a license get the least bit nervous? No. Why? Because the state boards of registration for professional engineers and land surveyors are lazy. They go after a consultant only when a complaint is filed, if the consultant is listed in the phone book as an engineer or if the consultant tries to incorporate a new company with the word "engineering" in its name in a state with corporate engineering practice licensing requirements.

State engineering regulation bureaucrats and their state employers are only in it for the money. Investigating violators costs more money than is recovered in fines so there isn't any incentive to dilute their income by enforcing the law.

For example, Texas, which requires that all public projects costing more than $3,000 be placed under the supervision of a registered engineer, declined to act on a complaint that the accounting firm of Peat Marwick Main & Co. engineered the Austin City Council's computer and communications system.

> Investigating violators costs more money than is recovered in fines so there isn't any incentive to enforce the law.
>
> ▲▲▲

Oklahoma, which has a corporate engineering licensing provision in its statute, refused to act on numerous complaints of blatant communications and computer application engineering by unlicensed individuals and corporations.

Experience shows that the registration boards don't give a damn about engineering as a profession. Anyone who wants to do consulting in the communications, computer, control and network systems application fields doesn't have a worry in the world about practicing engineering as long as they don't use the word "engineer" in their prospectus or contracts.

The lazy state boards of regulation won't ever know. All they ever do is occasionally leaf through phone books looking for the word "engineer."

Surprisingly, the American Society of Consulting Engineers hasn't taken any interest in network systems application regulation, either.

Radio and television engineers are no more engineers under state laws than are railroad engineers (locomotive drivers) or stationary engineers (boiler and construction hoist operators). Therefore, these kinds of "engineers" should have no say in the matter of engineering regulation.

Who should worry? Governmental and public communications and computer systems managers should probably worry about hiring consultants without engineering licenses only if their project runs over budget or time — as most do — or if a major problem occurs.

Oklahoma's Finance Office's new $10 million computer system, which didn't pay thousands of employees and suppliers for 30 to 60 days, is a good example of such problems.

There is always the problem of professional liability insurance. What insurance company is going to insure any self-proclaimed consultant not regulated by any state agency when attorneys, engineers, doctors and dentists, all of whom are licensed, have trouble?

There also is the problem of fraud. The possibility exists that some ambitious prosecuting attorney will pursue fraudulent engineering claims. Or some disgruntled client, whose communications project was not up to expectations, could sue for fraud on the same basis.

The engineering laws have been enforced so selectively and so unevenly during the years, especially concerning these technologies where the buyer for the first time has a choice of services and equipment, that the chance of anyone collecting a settlement are minimal even if you have a good attorney.

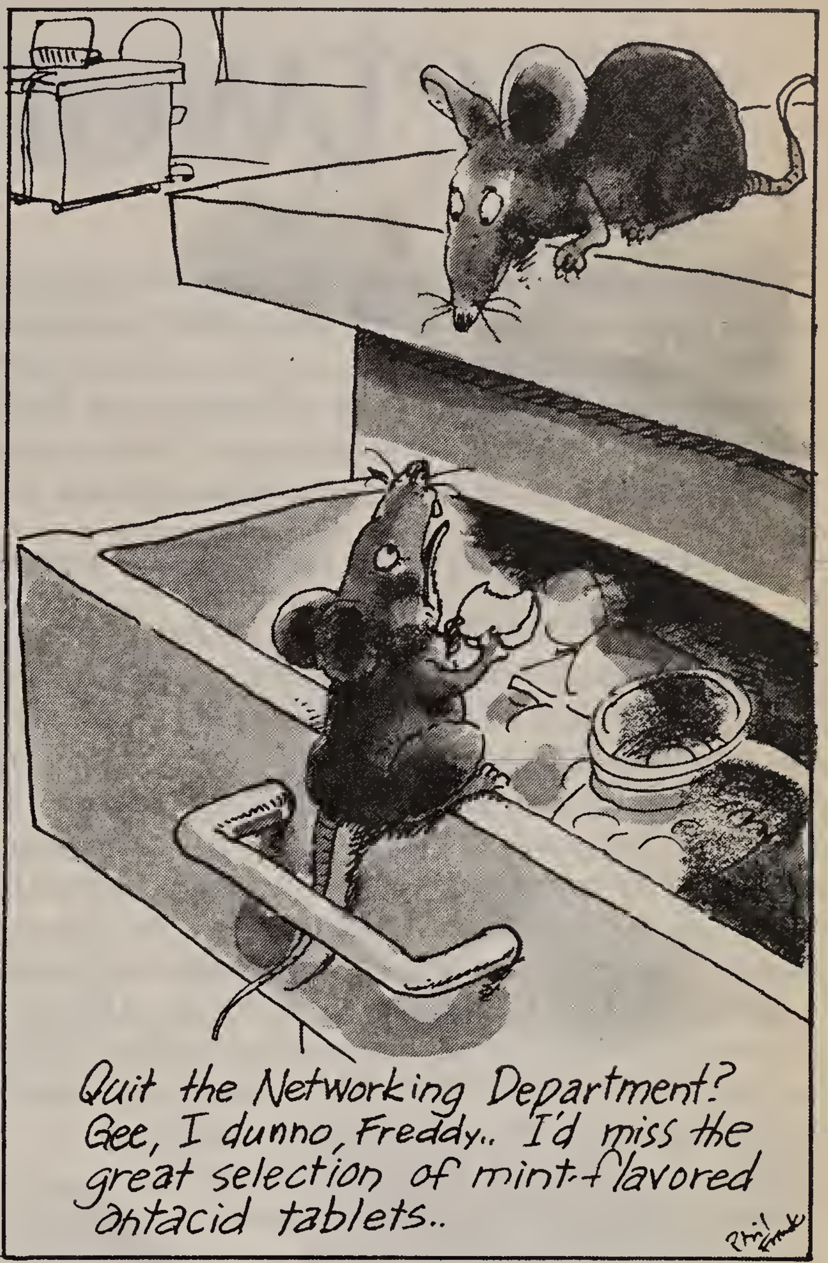
Here's hoping that someone makes a case soon. This current condition — in which virtually anyone with a business card can set up as a communications, computer, control or network systems applications consultant — is getting ridiculous.

Relatively ignorant managers have a tendency to go for the lowest cost and are getting stung more often. As networks become more vital links in our society and lives, health, property and public safety are at greater risk, this unregulated flood of so-called expert service offerings cannot be allowed to continue.

McDevitt is president and chief operating officer of Progress Engineering, Inc., a Tulsa, Okla.-based consulting company.

TELETOONS

BY FRANK AND TROISE


Quit the Networking Department? Gee, I dunno, Freddy.. I'd miss the great selection of mint-flavored antacid tablets..

LETTERS

Don't sell power short

A recent letter to the editor about electronic mail privacy ("E-mail privacy," *NW*, Oct. 29) stated that the ability "to monitor each employee's E-mail would be totally draining to the company's resources." That is not true.

The technology to scrutinize on-line documents exists today. Sophisticated algorithms that implement key word/dictionary searches, regular expressions, pattern recognition and other artificial intelligence techniques have been known for many years.

In addition, the major issue for the future is going to be how to integrate text-based transfers while maintaining security and privacy.

I wholeheartedly agree with the writer of the letter that privacy issues need to be addressed. But do not assume that computers cannot perform a certain task. It would be most unwise to underestimate the hardware and software computing power we will see in the very near future.

Wayne Smith
Independent consultant
Chatsworth, Calif.

Network World *welcomes letters from its readers.*

Letters should be typed and double-spaced. Mail them to Editor, Network World, *161 Worcester Road, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

AS PRISCILLA MULLINS SAID TO JOHN ALDEN, "Why don't you speak for yourself?" And do it by writing an opinion column for *Network World.*

Columns should be 600 words in length and submitted on disk, via modem or through MCI Mail at 390-4868.

If you'd like to write a column, call Alison Conliffe, assistant features editor, at (508) 820-7416 or fax your idea to us at (508) 820-3467.

When it comes networking solutions,

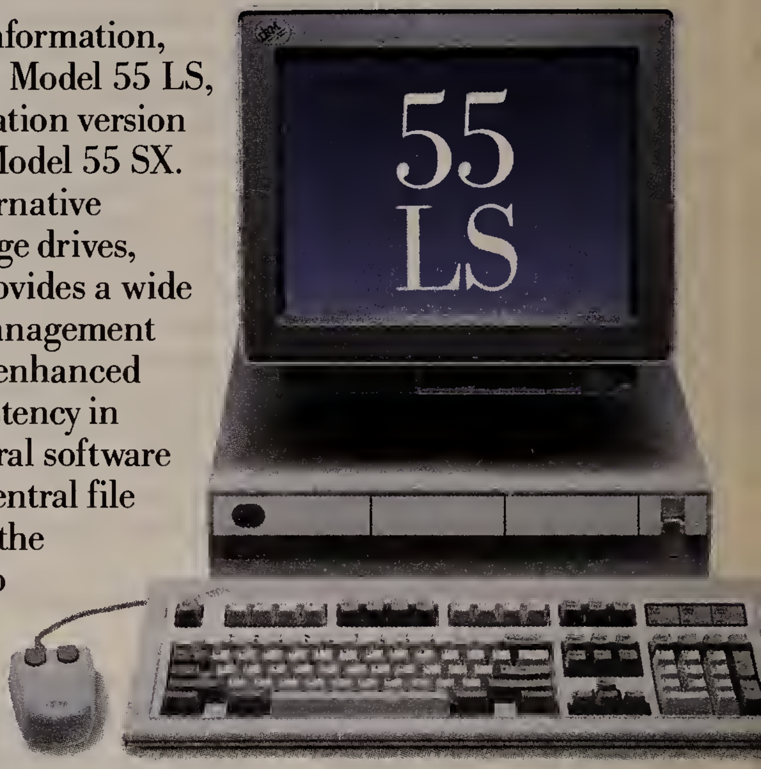
Recognizing the full potential of networking is one thing—actually realizing it is another. To truly fulfill that potential, every component of your network needs to turn in a great performance. That's why IBM offers a complete range of leading-edge LAN products in the desktop networking field—giving you the broadest range of solutions available to continually advance your system's possibilities.

Managers That Turn In A Great Performance.

At the heart of IBM networking are the members of the Personal System/2® family that act as high-performance LAN servers. The PS/2® Model 95 XP 486, IBM's sophisticated new 486™ computer, was especially designed to optimize network performance. The Model 95 features an Intel 33 MHz 486 processor or a 25 MHz 486 processor that's easily upgraded to 33 MHz, which quickens the pace of your LAN's operations. For your network's storage, not only are the Model 95's SCSI hard files lightning-quick, but the overall capacity is truly impressive—up to 1.6 gigabytes internally, and up to 8.96GB or more with IBM PS/2 External Enclosures. IBM also offers highly efficient, lower-cost server alternatives with the PS/2 Models 80 386 and 65 SX. All of IBM's PS/2 LAN servers feature the Micro Channel™ architecture, with its 32-bit data path and bus-mastering capabilities. The Micro Channel busmaster adapters allow you to expand your network's capabilities by adding multiple processors—like adding "computers" to your computer. It all amounts to highly reliable and powerful managers that inspire the same kind of performance from the rest of your network.

An Efficient Way To Bridle Your Data.

Whatever your needs may be, IBM has PS/2s that can serve as excellent client stations. And if you want to keep a tight rein on your network's information, IBM offers the PS/2 Model 55 LS, a medialess LAN station version of the best-selling Model 55 SX. A cost-efficient alternative to models with storage drives, the Model 55 LS provides a wide array of effective management controls, including enhanced data security, consistency in software levels, central software maintenance and central file backup. Not only is the Model 55 LS easy to hook up (it comes standard with a Token-Ring Network or Ethernet adapter), but should you need to modify your system, it's easy to upgrade with diskette and file storage devices.

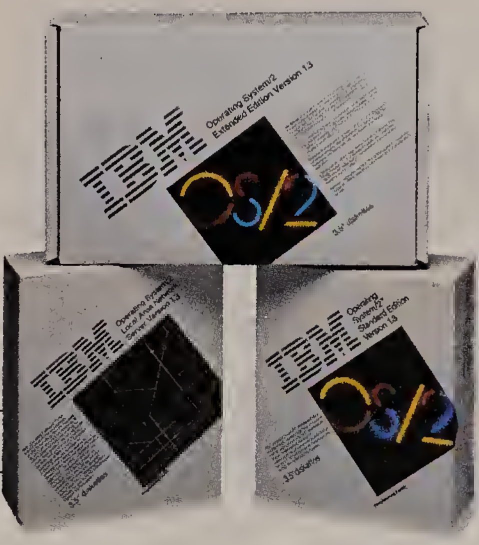


A New Breed Of Software.

Software that hits the ground running—that's our powerful new OS/2® V. 1.3, a high-performance, low-cost software package that supports both DOS and OS/2 clients on either a Token-Ring or Ethernet Network. Both the new OS/2 Extended Edition V. 1.3 and LAN Server V. 1.3 create an environment that delivers improved

to advanced IBM leads the way.

performance, less memory requirements, fewer DASD requirements and support for Adobe Type Manager™ fonts. And with support for 128 DOS requesters, LAN Server V. 1.3 can provide significant cost benefits for DOS network users. Compatibilities between IBM DOS LAN requester and the current version of Windows® 3.0 (LAN Manager 2.0 enhanced) have also been added, capping off the many ways IBM gives you greater flexibility in the LAN environment.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PRINTING THAT'S THE BEST IN THE FIELD.

For a great finish to any project, IBM offers a full range of printers for client stations, as well as the speedy, large-capacity IBM LaserPrinter, an efficient printing station with immensely attractive LAN benefits. With a high-duty cycle and fewer parts for fewer breakdowns, it offers extremely reliable printing while still boasting a 10-ppm printing speed. The optional paper bins allow for more efficient collation, so there's no need to visit and rearrange the printing station prior to the particular job. You can also easily and inexpensively upgrade to Adobe PostScript® It all adds up to a range of complete, reliable printing solutions that can handle the kind of workload that any network, large or small, can generate.

STEP UP THE PACE WITH TOKEN-RING NETWORK.

To optimize the link between your LAN server and client stations, you need a hardware connection that gives you access to departmental and company data, as well as communication with your co-workers—in other words, you need access to a winner's circle: the IBM Token-Ring Network, the winner four years running of the *PC World Magazine* World Class Award. It's a reliable and flexible networking solution, one of the only connections with a data transfer rate of up to 16MB per second.

You can also diagnose, isolate and correct problems in one section of your LAN without affecting the rest of your network. A system you can build on, IBM Token-Ring Network provides a reliable connection that's as strong as your need to keep in constant touch with the people and information around you.

COMMUNICATE WITH HORSES OF A DIFFERENT COLOR.

Of course, IBM provides you with several ways not only to connect your PS/2 LAN to a multitude of midrange and mainframe systems, but also to communicate with non-IBM systems as well. To conduct transactions such as hotel reservations, car rental and credit card authorization, an IBM communications adapter such as the IBM ARTIC Portmaster Adapter/A busmaster card, with the proper communciations software, can link your PS/2 with other companies' computers. With an Ethernet adapter, you can also connect to most Ethernet LANs. The integrated communications options of IBM OS/2 Extended Edition software can also allow your PS/2 to send mail, transfer files and access applications on other systems concurrently. So it's easy to benefit from the strengths of an IBM network while still having access to the rest of the computing world.

With the many components that constitute a Local Area Network, it's plain to see why a LAN is only as strong as its weakest link. That's why the IBM total LAN solution—LAN servers, workstations, networking software, printing stations and Token-Ring Network—is simply without peer: because there are no weak links. To find out how IBM can keep your network ahead of the pack, contact your IBM Authorized Remarketer or IBM marketing representative. For a remarketer near you, call 1 800 272-3438.

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SIXTH
ANNUAL
User
Excellence
Awards

Airline reservation ne flies into new age of

By SALVATORE SALAMONE

Software front end, QIK RES, speeds terminal termination at American Airlines.

They are stacked against the corridor walls — on one side, the uneven stacks of yellowing, dusty terminals; on the other, the neatly piled boxes of state-of-the-art IBM Personal Computers and monitors.

What image could better show the changing face of communications technology than this — the cluttered corridors stretching through the reservation centers of American Airlines, Inc., parent company of American Airlines Decision Technologies, Inc., cowinner of the Sixth Annual User Excellence Award.

These corridors are a sign of change. Thousands of terminals are going out; thousands of local-area network-based Personal Computers are coming in. American is certainly one of the leaders in this transition, but clearly, the rest of the airline industry will follow, moving

PHOTOGRAPHY ©1990 STAN WOLENSKI

work LANs

from dedicated terminal/mainframe systems to LANs with client/server architectures and graphical user interfaces.

The award was earned by Decision Technologies for a number of reasons: American's extensive wide-area network and the applications that run over it; the well-known SABRE network that American introduced nearly three decades ago; and the Qantas Intelligent Keypad Reservation System (QIK RES), a new user-friendly front-end interface to SABRE.

Some of the credit for QIK RES belongs to Qantas Airways, the international airline of Australia. American is quick to give credit to Qantas, which developed QIK RES. But Decision Technologies deserves the credit for modifying QIK RES and developing the applications for the SABRE net.

QIK is quick four ways

Currently, only American and Qantas run QIK RES. Both can resell it though. American has the rights to resell QIK RES in North America and in France; Qantas has the rights everywhere else. Similar systems are likely to be developed, but the advantage of QIK RES is its ability to be installed rapidly. American was able to install the front end and upgrade its hardware before the expected recession. That imminent downturn, according to airline analysts, may constrain some of the other airlines from deploying new equipment.

This is likely to give American a considerable advantage over its competitors, which are lagging in development of similar network upgrades. Because of the looming recession, carriers are unlikely to make significant investments in new equipment.

As its name implies, the main benefit of QIK RES is the time that is expected to be saved in making reservations. It also saves time in training reservation agents, and since it contains a simplified programmer's tool chest, it saves time in designing new applications.

But QIK RES could also stand for "quick resolution." QIK RES, an already designed package, had the advantage of being able to be implemented quickly, compared with building something similar using the firm's own development team. Selecting an existing product seems a simple thing to do, but many organizations have to guard against the "not invented here" mentality, which has led to innovations not being adopted because in-house staff didn't think of them first.

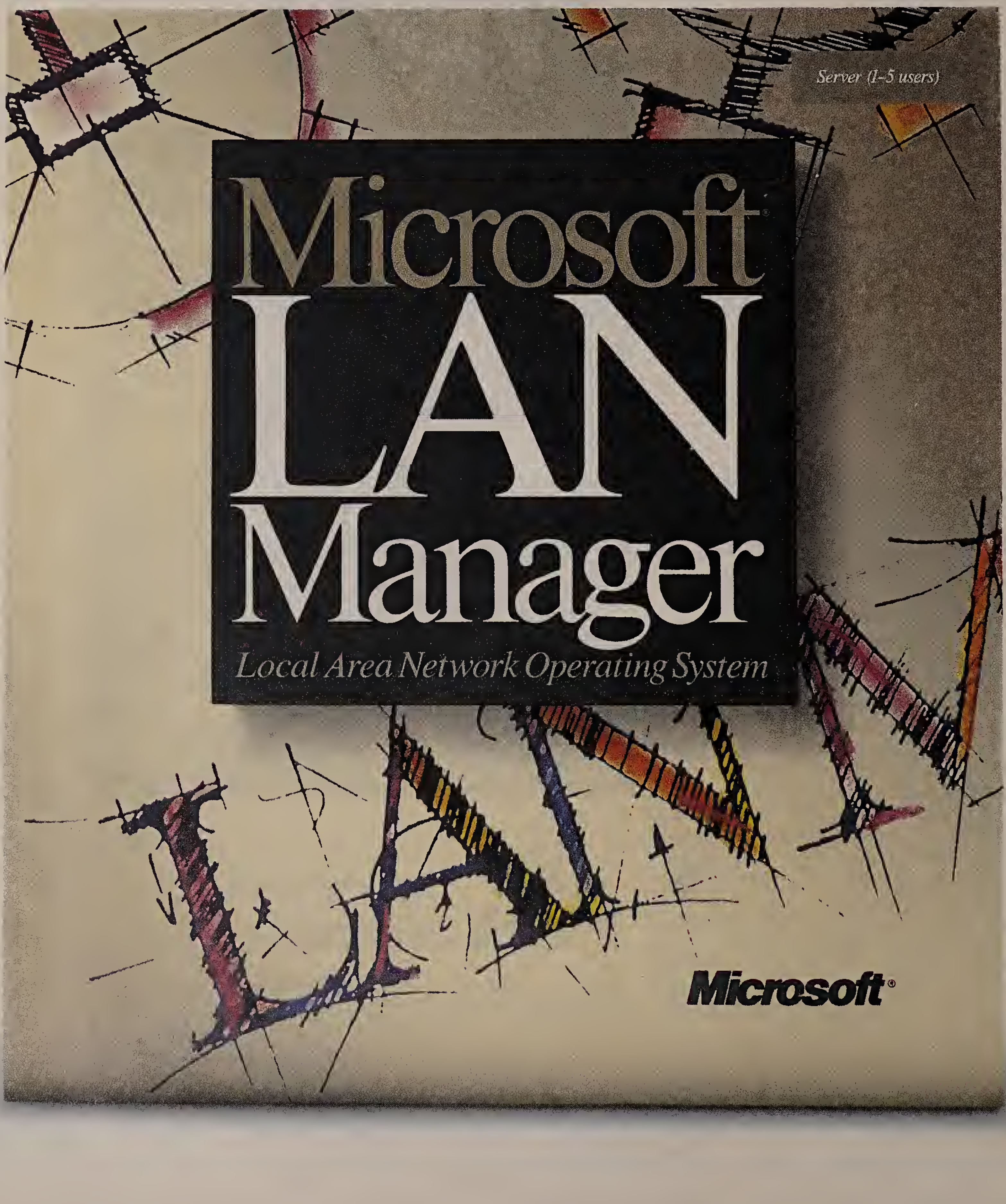
When American realized it needed something like QIK RES, it debated designing its own front end. A group from American's Tulsa, Okla.-

(continued on page 48)

American Airlines

Counterclockwise from upper left: Thomas Cook, Susan Starkie, Chip Steinmetz and James Verges.

Think of it as an investment with immediate dividends.



And long-term gains.

The ideal network software should help you run all your departments.

Including those departments you haven't connected yet.

Introducing LAN Manager 2.0 from Microsoft. Its long list of standard features includes fault tolerance, 32-bit support and enough security to keep all your confidential data confidential.

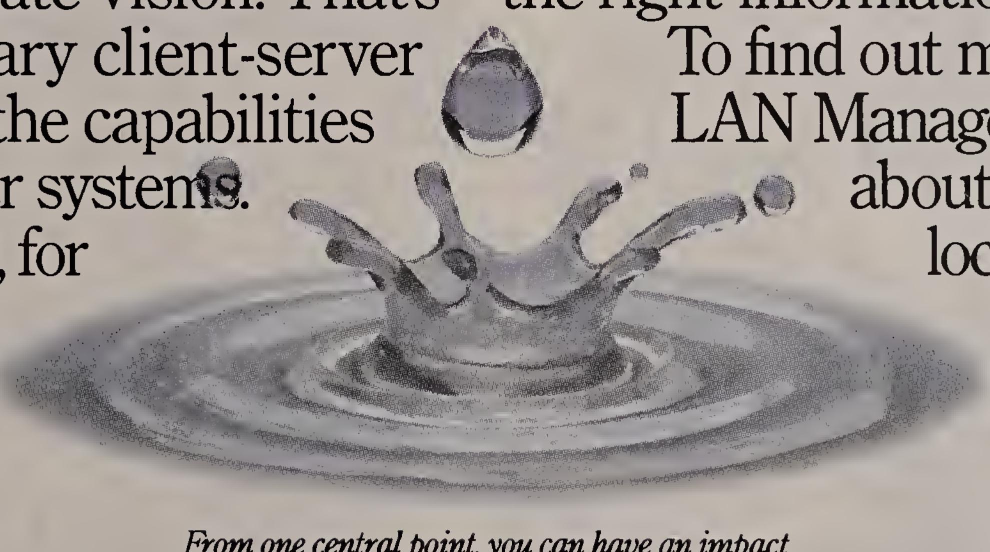
Plus, it's flexibly priced, based on the number of users. Which makes it a good value as well as a good product.

Innovative programs like Lotus Notes,® Saros™ FileShare,™ and Microsoft SQL Server take advantage of the Microsoft platform.

But down the line, choosing LAN Manager 2.0 will demonstrate even more than good value.

It will demonstrate vision. That's because its revolutionary client-server architecture gives you the capabilities you'd expect from larger systems.

Making it viable, for the first time, to run critical applications as well as non-critical ones on your own standard PC network.



From one central point, you can have an impact across the whole network with features like domains.

And since client-server architecture can marry high-level control with all the speed and accessibility of a PC network, its future is indeed shining bright.

An observation not overlooked by the many systems companies who are selling and supporting it to the fullest.

Among them: 3Com, AT&T, DEC, HP, IBM, NCR and Ungermann-Bass.

Because the Microsoft environment is wide open, so is the future.

But there's more to the story. Now your network administration will be more manageable, too, thanks to LAN Manager's multi-server administration tools. Plus, it's got the power to handle multiple processors.

So no matter how big your network grows, it won't outgrow LAN Manager.

LAN Manager. Part of Microsoft's line of network products designed to let everyone make the right connections to the right information.

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SIXTH
ANNUAL
User
Excellence
Awards

Back row (l. to r.): C. Donald Rees II, vice-president; Betty Sparkman Shephard, assistant vice-president; Gary Patterson, vice-president; Gary Knapp, telecommunications executive; Beatrice Witkowski, vice-president. Seated: William Spies II, divisional vice-president.

1ST First National Bank of Maryland

First National Bank of Maryland's Telecommunications Systems Division wins kudos from upper management as well as from Network World.

A good network is like money in the bank

By JIM BROWN

With a souring economy tightening banks' operating margins, First National Bank of Maryland is thankful it started building its First Net private network five years ago.

Not only has the network cut bank operating costs by $1.2 million a year and become a key building block in the bank's strategic plan to win customers with electronic banking services, it has earned the bank's Telecommunications Systems Division (TSD) recognition as a *Network World* User Excellence Award cowinner.

First moves

First National began realizing the benefit of communications in the early 1980s, when it opened First Omni Bank, N.A. in Millsboro, Del. That move was made when Maryland imposed strict limits on the amount of interest banks could charge for credit cards issued in the state.

Delaware's more liberal laws enable the bank to respond more easily to market pressures by raising or lowering its credit card interest rate in accordance with economic conditions.

At first, the bank acquired leased 56K bit/sec digital data circuits to link an IBM 3084 host in Millsboro, used to process credit card accounts, to an IBM 3090 in Baltimore. This link enabled the bank to keep credit card processing tasks at Millsboro while giving users in both sites access to data on either mainframe.

Looking in-house

After the success in Millsboro, TSD began broadening the bank's use of networking, but it found that carriers could not provide the bank with the advanced services it required. Therefore, it started planning to build First Net and finally gained executive management approval for the project in 1985.

The bank started building First Net in 1986 and completed the project this year, with the installation of the last of 15 Northern Telecom, Inc. private branch exchanges in Denton, Md. The bank also added a Northern Telecom Meridian Mail voice processing system to the network this year to support voice mail, automated attendant and interactive voice response applications.

First Net set the stage for TSD to consolidate First Omni's data center into its data center in Baltimore through the use of channel extenders.

Selling executive management at First National Bancorp, the holding company that owns First National, on the network project was no easy task.

According to a former First National employee who requested anonymity, executive management did not take kindly to technologists after an ill-fated purchase of IBM processing hardware in the late 1970s. At that time, the bank purchased an IBM processor that became obsolete weeks later when IBM introduced a new line of processors.

After that fiasco, executive management began looking more critically at technology-related expenses. Although it had no part in the earlier decision, the current TSD staff had to do its utmost to win the support of executive management.

Careful planning

TSD had to present its plan as if it were an outside vendor trying to land the bank's business. This entailed preparing intricate cost/benefit analyses and organizational charts to show how the bank could manage its network. After two years of hard work, TSD's cost/benefit analysis finally convinced executive management that the private network would not only reduce communications expenses, but it would give the bank the technological infrastructure to add strategic electronic banking services for a small incremental cost.

(continued on page 40)

Brown is a senior editor at Network World.

PHOTOGRAPHY ©1990 WALTER P. CALAHAN

(continued from page 39)

To this day, TSD is organized as if it were a carrier providing services to each First National department. The division has put a sophisticated cost-accounting system together that enables it to charge back the full cost of communications service to internal banking departments.

For example, the division uses station message detail recording to bill back the cost of a phone call to the extension that made it. It has also developed a price list that helps it determine what to charge each department to cover such costs as TSD operations personnel and network equipment, as well as equipment moves, adds and changes. To develop the price list, TSD listed all of the expenses and assigned a unit value to each of them.

Each department is charged for the actual units used. For example, the charge for installing a telephone consists of the cost of the phone and other hardware such as wiring and wall plates, as well as a labor charge that is designed to recover the salary cost for the technician installing the phone and the one adding it to the PBX routing table.

> "Our credibility with executive management has grown by leaps and bounds," Spies says.
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"We like to think of ourselves as the private telephone company for the bank," says Gary Patterson, a TSD vice-president in charge of finances.

As part of the executive management decision approving $5.2 million to build the private network, TSD was required to provide progress reports for the project. Management wanted to monitor the spending of $2.5 million to buy and install 15 Northern Telecom SL-1 PBXs and $2.7 million for the equipment, installation and legal fees for a 220-mile private microwave net. In fact, three years after approving the network, executive management closely examined whether TSD had met the goals it had set for itself.

"We not only met them, we exceeded them," Patterson says. In fact, TSD has been able to come in under its budget for four consecutive years. For each of the first three years, TSD's budget has been lower than the preceding year. This year, however, the budget is 3.5% higher than last year because of an increase in demand for TSD services throughout the bank.

According to Patterson, TSD has been able to prove that the network's total loaded cost per minute, which includes transmission service, personnel, equipment and other expenses, has decreased each year as the amount of traffic has increased. For instance, in 1988, the network's total loaded cost was 32.5 cents per minute while traffic amounted to 1.28 million minutes a year. In 1989, that cost went down to 26.1 cents per minute while traffic went up to 1.5 million minutes. As of last September, the per-minute cost was 21.7 cents while traffic increased to 1.9 million minutes.

The proven financial success of First Net gives TSD the armor it needs to deflect second-guessing and attacks from executive management. It also makes it easier for TSD to gain upper management's approval for new projects.

"Our credibility with executive management has grown by leaps and bounds because we have lived up to our commitments," says William Spies II, divisional vice-president of TSD. "Business plans are now approved in weeks vs. years."

But success is a double-edged sword, says C. Donald Rees II, vice-president in charge of operations. "Once you get executive management's stamp of approval, you have their complete support. That's the good news. The bad news is that you can't ever afford to corrupt that support."

"We have a few challenges," Spies said. "One is to provide voice and data services cost-effectively. The other is to be a watchdog on new technologies and determine how they might be applied to the business of banking."

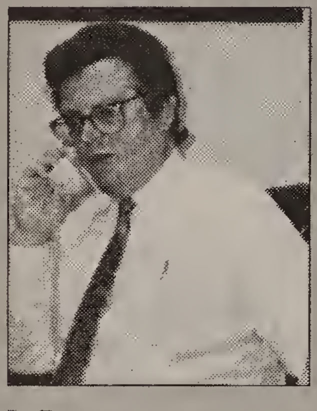
TSD's 32 employees have done both. The group built First Net, anchored by the SL-1s and microwave radio links, to complement its existing use of four IBM front-end processors (three 3720s and a 3745), a mix of leased carrier services, as well as its own private fiber-optic cable. By using this network to replace Centrex and local telephone services, First National is saving the aforementioned $1.2 million in operating costs annually.

First Net

The 15 PBX sites act as regional switching centers for the voice part of the network, while the three sites with IBM 3720 front-end processors act as concentration points on the data network to feed data to a 3745 front-end processor at the bank's only data center in Baltimore. Branches in Baltimore are linked directly to the 3745.

Each of the bank's branches uses key systems to provide local voice services and access to the nearest PBX via dial-up lines.

(continued on page 44)



Burt Treger
Network Planning Manager
SunTrust Service Corporation

". . . Today's rapid changes make it impossible for any one person or company to stay abreast of technology. Since I can't read everything, I read Network World."

The Atlanta-based SunTrust Service Corporation provides communications and data processing services to SunTrust Banks, Inc., a $30 billion super regional banking institution comprised of Sun Banks in Florida, Trust Company Banks in Georgia, and Third National Banks Corporation in Tennessee. Burt Treger, SunTrust Service Corp.'s Network Planning Manager, faces the ongoing challenge of supporting users while reducing business costs.

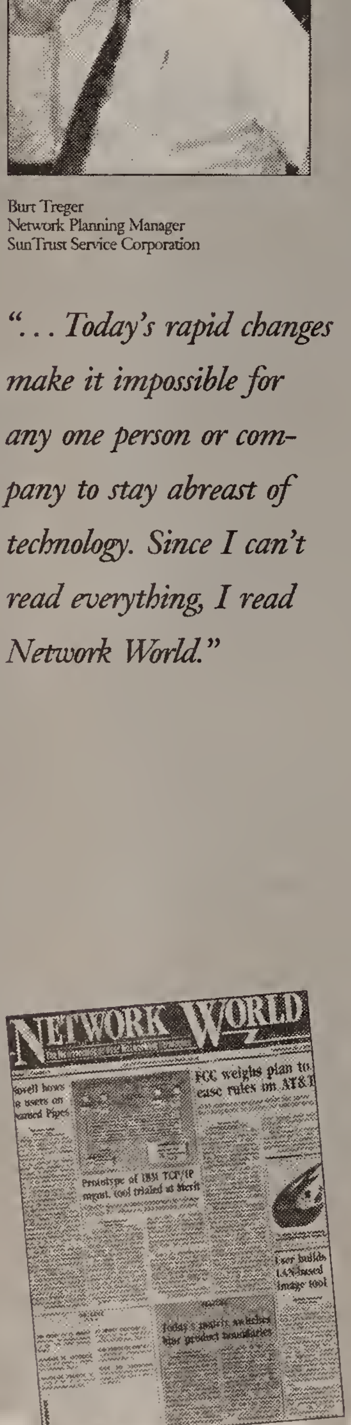
"We utilize a T-1 backbone meshed network to handle both voice and data in a three-state area. Our corporate network links about 15,000 on-line devices, 740 ATM's and 21,000 phone sets, as well as 700 data and 400 voice circuits. Initially, we got into networking for two major reasons. First, with the divestiture's elimination of Telpak, we needed a way to reduce costs. And second, with the merger of the Tennessee banks, we needed to consolidate data processing into Georgia, which, as it turns out, results in substantial savings annually.

"Now we're implementing a major redesign program, and our T-1 facilitates our biggest effort — working toward a LATA-pure network. Our goal is to provide more bandwidth, improve response time, and reduce network management by replacing multiple low-speed multi-drop data circuits with a single highspeed (56K) multi-drop data circuit to every branch. "While the success of our program is highly dependent on information, today's rapid changes make it impossible for any one person or company to stay abreast of technology. Since I can't read everything, I read *Network World.* It covers everything I need for making informed buying decisions — the newest products, latest technologies, and most important considerations when evaluating equipment.

"SunTrust Service Corp.'s philosophy is to stay with a few major vendors, and *Network World* plays a critical role in keeping us informed on issues relating to vendor compatibility, responsiveness, network management, and pricing. Plus, finding out what our peers are doing either validates what we're doing or steers us on a different course."

"*Network World* provides a broad yet in-depth picture of networking. In fact, I find *Network World* so valuable that I request back issues when I need additional information on specific networking topics. It's definitely one of the very best sources for comprehensive coverage of information most pertinent to our needs."

Network World. Its exclusive coverage delivers the most focused editorial on enterprise networking every week. Leading users like Burt Treger of SunTrust Service Corporation understand how today's technologies are shaping tomorrow's business successes. That's why week after week, *Network World* is their most important information source for helping ensure a competitive edge.



"INFORMATIVE"

SIXTH
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Awards

The rest of the best

These five outstanding companies earned honorable mention in Network World's User Excellence Award competition.

Allegheny Ludlum Corp.'s #9 Maintenance Division of Brackenridge, Pa.

◆

American Management Systems, Inc. of Arlington, Va.

◆

Edward D. Jones & Co. of Maryland Heights, Mo.

◆

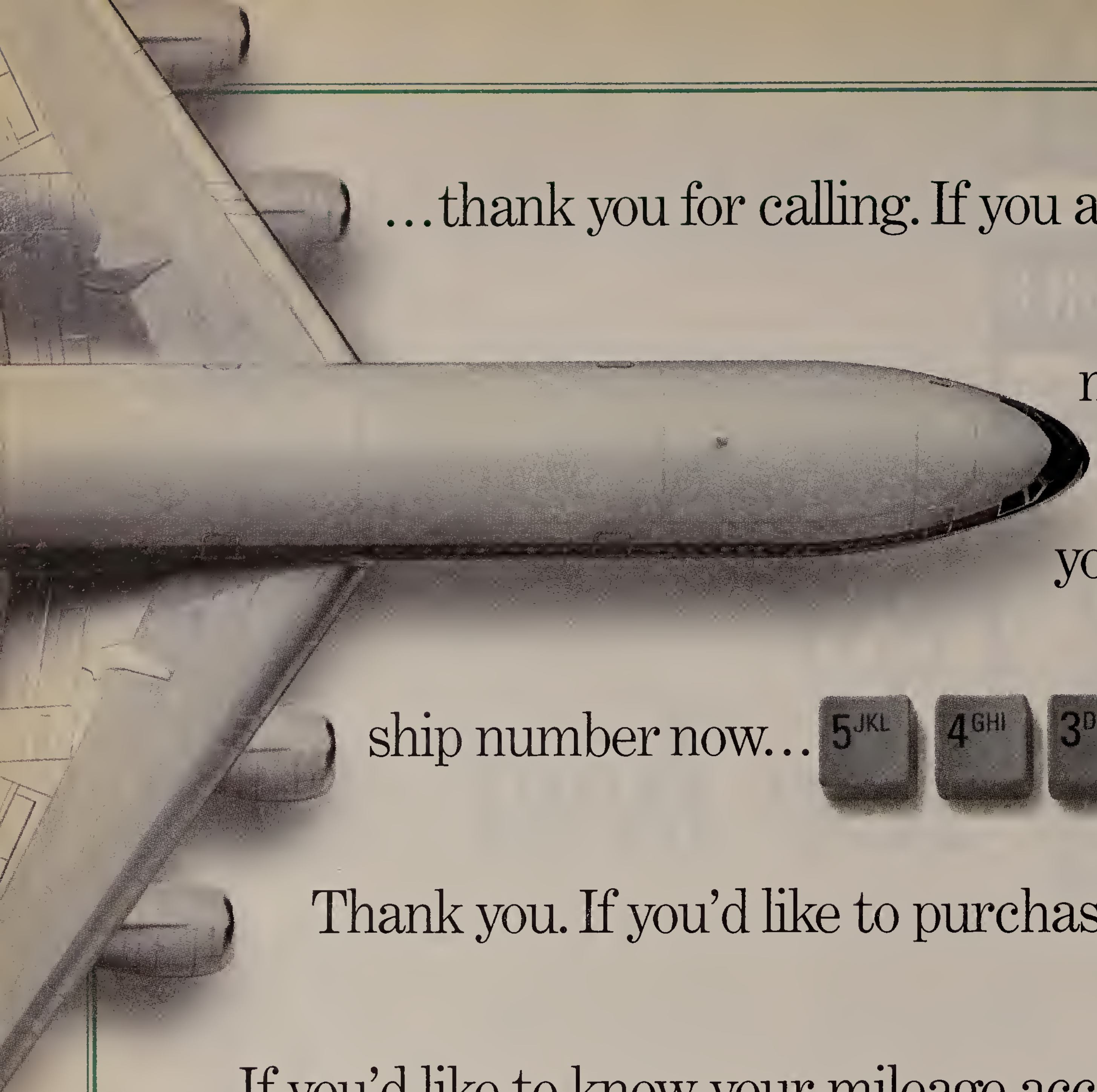
K mart Corp. of Troy, Mich.

◆

The University of California, San Diego

◆

Stories detailing these companies' achievements can be found on page 52.



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Thank you. If you'd like to purchase a ticket, press 1. If you'd like to know your mileage account balance, press 2. If you'd like scheduling or reservation information, press 3. 1 All our agents are currently busy. As an Air Gold Club member, however, your call will receive special priority.

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Communication Systems

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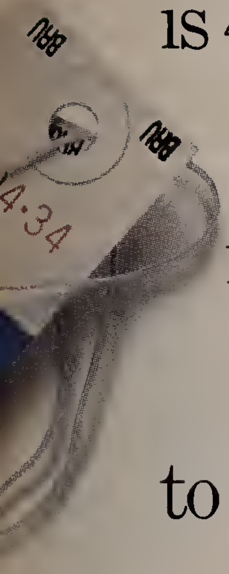
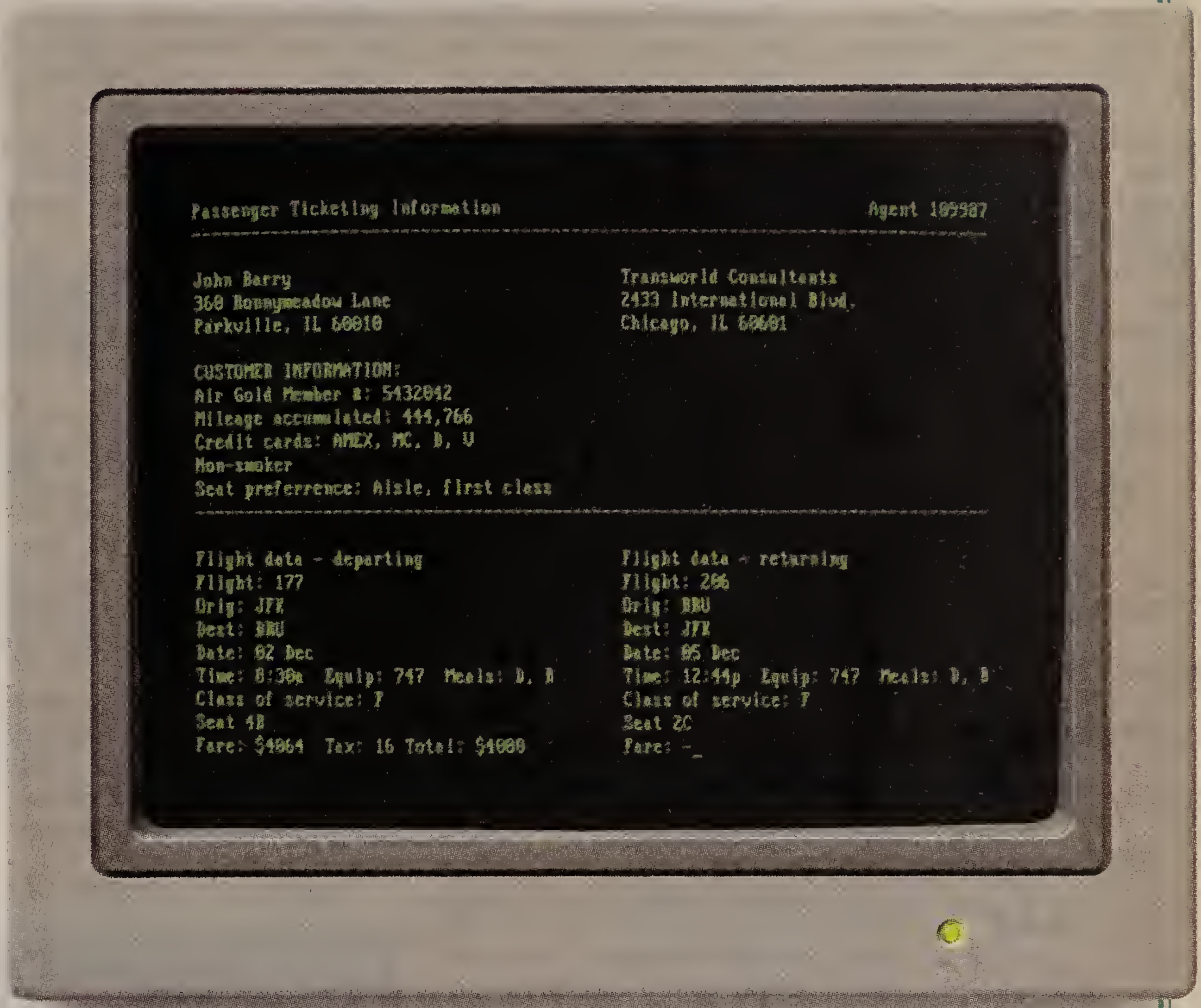
Meridian 1 makes life easier by putting stand-alone features and PBX functions in one modular package.

We took features like voice mail, networked ACD, and interactive voice response and put them in one modular package. Then we taught them how to work with each other in a way no ordinary PBX ever could. What we ended up with was a very intelligent, very

It will be handled by the next available agent in our transcontinental network. An agent will be with you shortly. In the meantime, you may wish to know your frequent flyer mileage is 444,766 miles. We are now transferring you to an agent…"Hello, Mr. Barry. Brussels on the 2nd? There's a flight available at 8:30 A.M. Fine. I've reserved your favorite seat, 4B. Would you like your special menu?…"





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Passenger Ticketing Information                                      Agent 109987
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John Barry                                  Transworld Consultants
360 Bonnymeadow Lane                        2433 International Blvd.
Parkville, IL 60010                         Chicago, IL 60601

CUSTOMER INFORMATION:
Air Gold Member #: 5432042
Mileage accumulated: 444,766
Credit cards: AMEX, MC, D, V
Non-smoker
Seat preferrence: Aisle, first class
---------------------------------------------------------------------------------

Flight data - departing                     Flight data - returning
Flight: 177                                 Flight: 266
Orig: JFK                                   Orig: BRU
Dest: BRU                                   Dest: JFK
Date: 02 Dec                                Date: 05 Dec
Time: 8:30a  Equip: 747  Meals: D, B        Time: 12:44p  Equip: 747  Meals: D, B
Class of service: F                         Class of service: F
Seat 4B                                     Seat 2C
Fare: $4064  Tax: 16 Total: $4080           Fare: -_
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TECHNOLOGY THE WORLD CALLS ON

Money in the bank

continued from page 40

The PBXs in northern and western Maryland provide access to T-1 circuits leased from AT&T or The Chesapeake and Potomac Telephone Co. of Maryland, the local exchange carrier, that route calls to Baltimore.

Calls from eastern Maryland and Delaware are routed across Chesapeake Bay to Baltimore via the bank's dual-ring, 13-tower microwave network from the Farinon Division of Harris Corp., which supports a throughput of 45M bit/sec.

Voice calls from southern Maryland and Washington, D.C. are routed to Baltimore over a Williams Telecommunications Group, Inc. fiber-optic circuit supporting T-2 speeds of 6.312M bit/sec.

> "They're coming into an arena where they can now compete with the cost structure of larger banks."
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Private microwave also gave the bank the technical tool it needed to obtain the advanced services that carriers could not provide within the region.

In order to avoid outages, the microwave network crosses the bay twice. Should one path fail, traffic is routed across the other.

In November 1986, the bank installed its own fiber-optic cable to provide a T-3 link between its operations center on S. Paca Street in Baltimore and the data center, located in the bank's headquarters building at S. Charles Street five blocks away. That cable, operational as of December 1986, also carries traffic on the private network to an AT&T point of presence (POP) in downtown Baltimore that supports long-distance calling services. The AT&T POP also routes incoming 800 service calls across the fiber cable and onto the bank's private network.

Finally, the bank uses a fiber-optic T-1 line leased from Metropolitan Fiber Systems, Inc. to access an MCI Communications Corp. POP in Baltimore for backup long-distance services.

On the data side, each of the bank's branches is equipped with an AT&T Paradyne Multiple Virtual Modem (MVM), a multiport, time-division multiplexing modem. SCI Corp. terminal controllers supporting teller and administration terminals in each branch transmit data to the MVM at 9.6K bit/sec, while inbranch security devices send data to the MVM at 2,400 bit/sec.

The modem combines data from the two sources and transmits it over a multidrop analog leased line at 14.4K bit/sec to the nearest 3720. In addition, the bank links automated teller machines over a separate multidrop leased line at 4.8K bit/sec to the nearest 3720.

The bank has a total of 30 multidrop circuits in its branch data network, with each circuit supporting an average of six branches. The ATM network includes 19 multidrop circuits, each of which supports nine ATMs.

The 3720 combines incoming data onto two outgoing 9.6K bit/sec data streams. One is fed to Baltimore via an AT&T 9.6K bit/sec leased line that is separate from the bank's backbone net. The other is fed from the 3720 to a modem that uses a collocated PBX to establish a 9.6K bit/sec dial-up link to Baltimore on the bank's backbone net. Using the leased and dial-up links simultaneously provides an active backup path for data should one of the links fail.

The bank also uses Network Systems Corp. channel extenders to route data between an IBM 3090 mainframe in its data center to such remote peripherals as terminal controllers, laser printers and check sorters in the nearby operations center and its First Omni subsidiary in Millsboro.

For disaster recovery services, First National uses a Cable & Wireless Communications, Inc. T-1 circuit to link its data center in Baltimore to a SunGard Recovery Services, Inc. data center in Philadelphia.

Net advantages

The network design has won acclaim from others in the banking industry, some of whom envy the tightness of First National's geographical environment. Given the size of Maryland and Delaware, even the farthest point in the backbone network is within 200 miles of Baltimore. This makes it possible for network operations staff in Baltimore to be at any site in the network within a few hours should problems arise.

"I think those guys are absolutely on the right track in the environment that they are in," says George Mattingly, vice-president and director of telecommunications for First Union Corp., a bank in Charlotte, N.C. "They did a fine job of leveraging their physical presence and skill set in the microwave radio arena to deliver a cost-effective, functional network."

By using First Net to aggregate the traffic that is handed off to carriers, the bank has lowered its per-minute voice and data service cost on its leased carrier lines from 9.8 cents per minute in September 1988 to 5.9 cents per minute in September 1990. The resulting competitive advantage has wrung praise from First National's competitors, including larger banks that are able to obtain excellent rates from carriers under volume discount plans.

"If they've got an advantage, it's [because] they have lowered their networking cost structure beyond what they would have to pay with conventional tools," says Keith Jonas, corporate communications executive officer with Sovran Financial Corp. in Richmond, Va. Sovran Financial is a holding company that owns a series of banks throughout the southeastern U.S., one of which directly competes against First National.

"They're coming into an arena where, as a small regional bank, they can now compete with the cost structure of larger regional banks," Jonas says.

TSD agrees that its 5.9 cents per-minute cost rivals what larger banks can obtain. TSD's Spies admits that other private network users can get dramatically less expensive services by turning over all of their traffic to a virtual network service supported by a carrier's switched net.

"But if you build a private network right, the costs are virtually neck and neck," Spies says. "And clearly, there is more you can do with a private network because you have more control."

"Our hope is to take First Net and utilize that as a cost-effective delivery mechanism for banking services and products," says Beatrice Witkowski, a TSD vice-president in charge of strategic planning. "Electronics is the cheapest delivery mechanism there is."

> "Clearly, there is more you can do with a private network because you have more control," Spies says.
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Building, staffing and operating branches in areas where the bank does not have many customers is too expensive, Witkowski says, especially when the bank's small kiosks housing one or more ATMs can support basic deposit and withdrawal services at a much lower cost than a teller.

Phone First

First National offers an electronic banking service called Phone First. Phone First allows customers to use a telephone keypad to move funds between accounts and to verify the amount of the last check they wrote.

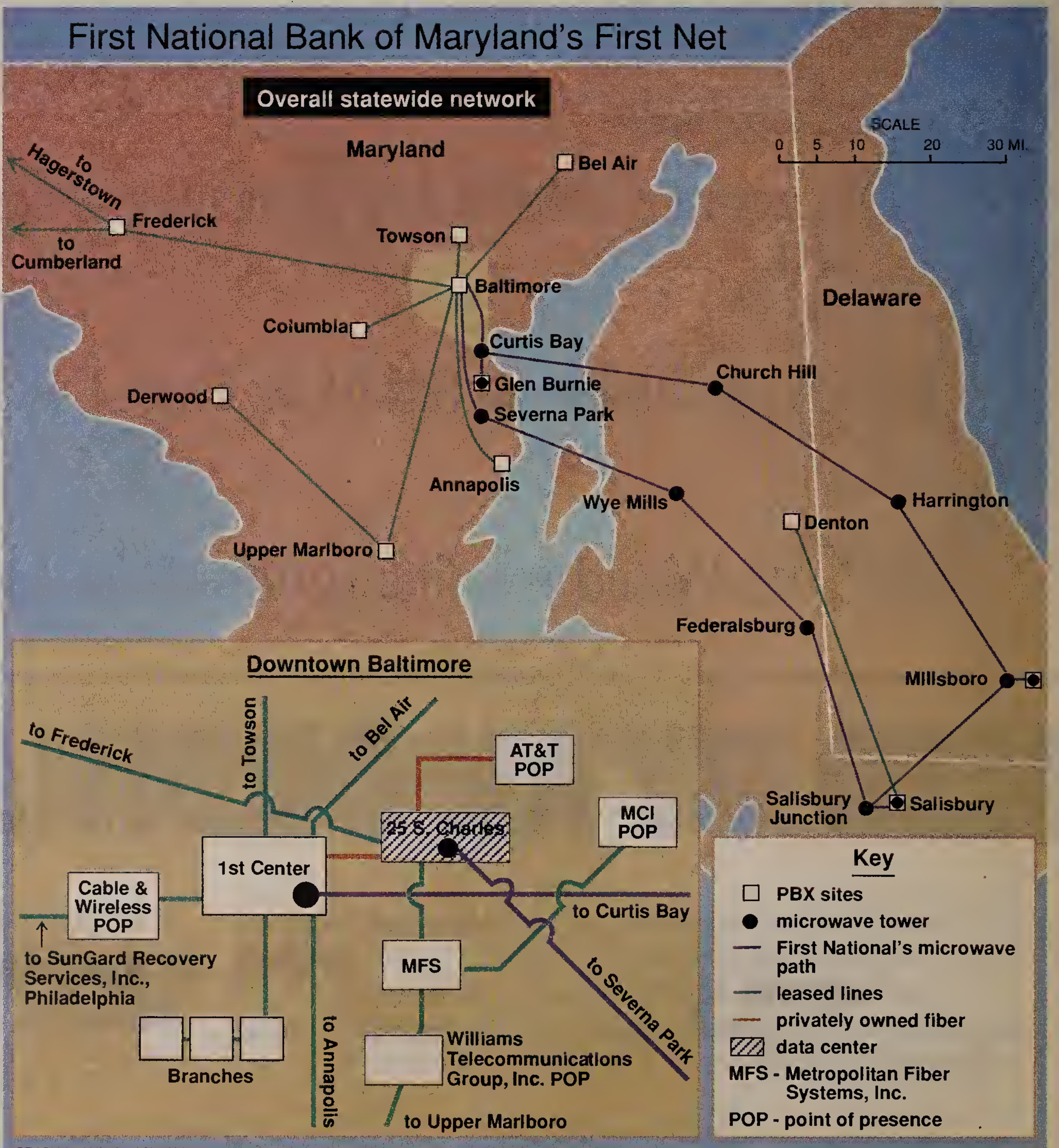
It also enables customers who use direct deposit to find out if their paychecks have been credited to their accounts or customers who have authorized the bank to automatically withdraw funds to cover loan payments find out if that transfer has occurred.

Phone First has been an unqualified success. "We expected by year end to have 10,000 calls a day," Spies says. "We reached that volume [in the] spring." He now projects Phone First will reach 23,000 calls a day by year end.

Most calls to Phone First are routed over First Net to a voice processing system in the data center.

Another keypad application, which has yet to be named, lets customers find out how much they have left on their preapproved credit card limits. In addition to the obvious consumer benefits, this service is designed to spur use of the bank's credit card, resulting in higher interest income and collection of addi-

(continued on page 54)



First National Bank of Maryland's First Net

GRAPHIC BY SUSAN SLATER

SOURCE: FIRST NATIONAL BANK OF MARYLAND, BALTIMORE

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☐ Departmental

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☐ One Site
☐ 2-9 Sites
☐ 10-20 Sites
☐ 21+ Sites

Product Advertised: ______________________

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Intended Application: ______________________

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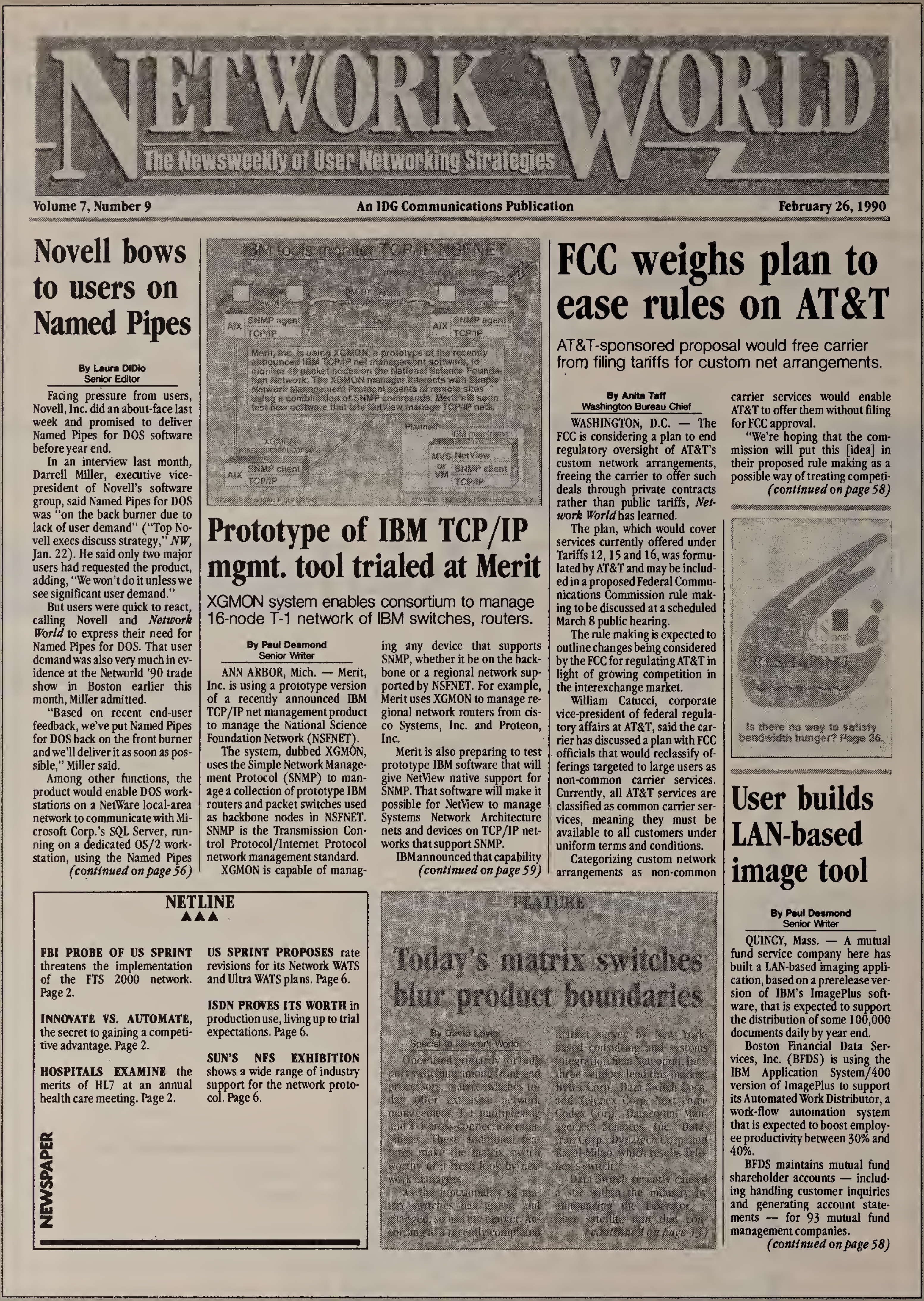

NETWORK WORLD
The Newsweekly of User Networking Strategies
Volume 7, Number 9 An IDG Communications Publication February 26, 1990

Novell bows to users on Named Pipes

By Laura DiDio
Senior Editor

Facing pressure from users, Novell, Inc. did an about-face last week and promised to deliver Named Pipes for DOS software before year end.

In an interview last month, Darrell Miller, executive vice-president of Novell's software group, said Named Pipes for DOS was "on the back burner due to lack of user demand" ("Top Novell execs discuss strategy," *NW*, Jan. 22). He said only two major users had requested the product, adding, "We won't do it unless we see significant user demand."

But users were quick to react, calling Novell and *Network World* to express their need for Named Pipes for DOS. That user demand was also very much in evidence at the Networld '90 trade show in Boston earlier this month, Miller admitted.

"Based on recent end-user feedback, we've put Named Pipes for DOS back on the front burner and we'll deliver it as soon as possible," Miller said.

Among other functions, the product would enable DOS workstations on a NetWare local-area network to communicate with Microsoft Corp.'s SQL Server, running on a dedicated OS/2 workstation, using the Named Pipes

(continued on page 56)

IBM tools monitor TCP/IP NSFNET

Merit, Inc. is using XGMON, a prototype of the recently announced IBM TCP/IP net management software, to monitor 16 packet nodes on the National Science Foundation Network. The XGMON manager interacts with Simple Network Management Protocol agents at remote sites using a combination of SNMP commands. Merit will soon test new software that lets NetView manage TCP/IP nets.

Prototype of IBM TCP/IP mgmt. tool trialed at Merit

XGMON system enables consortium to manage 16-node T-1 network of IBM switches, routers.

By Paul Desmond
Senior Writer

ANN ARBOR, Mich. — Merit, Inc. is using a prototype version of a recently announced IBM TCP/IP net management product to manage the National Science Foundation Network (NSFNET).

The system, dubbed XGMON, uses the Simple Network Management Protocol (SNMP) to manage a collection of prototype IBM routers and packet switches used as backbone nodes in NSFNET. SNMP is the Transmission Control Protocol/Internet Protocol network management standard.

XGMON is capable of managing any device that supports SNMP, whether it be on the backbone or a regional network supported by NSFNET. For example, Merit uses XGMON to manage regional network routers from cisco Systems, Inc. and Proteon, Inc.

Merit is also preparing to test prototype IBM software that will give NetView native support for SNMP. That software will make it possible for NetView to manage Systems Network Architecture nets and devices on TCP/IP networks that support SNMP.

IBM announced that capability

(continued on page 59)

FCC weighs plan to ease rules on AT&T

AT&T-sponsored proposal would free carrier from filing tariffs for custom net arrangements.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The FCC is considering a plan to end regulatory oversight of AT&T's custom network arrangements, freeing the carrier to offer such deals through private contracts rather than public tariffs, *Network World* has learned.

The plan, which would cover services currently offered under Tariffs 12, 15 and 16, was formulated by AT&T and may be included in a proposed Federal Communications Commission rule making to be discussed at a scheduled March 8 public hearing.

The rule making is expected to outline changes being considered by the FCC for regulating AT&T in light of growing competition in the interexchange market.

William Catucci, corporate vice-president of federal regulatory affairs at AT&T, said the carrier has discussed a plan with FCC officials that would reclassify offerings targeted to large users as non-common carrier services. Currently, all AT&T services are classified as common carrier services, meaning they must be available to all customers under uniform terms and conditions.

Categorizing custom network arrangements as non-common carrier services would enable AT&T to offer them without filing for FCC approval.

"We're hoping that the commission will put this [idea] in their proposed rule making as a possible way of treating competi-

(continued on page 58)

Is there no way to satisfy bandwidth hunger? Page 36.

User builds LAN-based image tool

By Paul Desmond
Senior Writer

QUINCY, Mass. — A mutual fund service company here has built a LAN-based imaging application, based on a prerelease version of IBM's ImagePlus software, that is expected to support the distribution of some 100,000 documents daily by year end.

Boston Financial Data Services, Inc. (BFDS) is using the IBM Application System/400 version of ImagePlus to support its Automated Work Distributor, a work-flow automation system that is expected to boost employee productivity between 30% and 40%.

BFDS maintains mutual fund shareholder accounts — including handling customer inquiries and generating account statements — for 93 mutual fund management companies.

(continued on page 58)

NETLINE

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FBI PROBE OF US SPRINT threatens the implementation of the FTS 2000 network. Page 2.

INNOVATE VS. AUTOMATE, the secret to gaining a competitive advantage. Page 2.

HOSPITALS EXAMINE the merits of HL7 at an annual health care meeting. Page 2.

US SPRINT PROPOSES rate revisions for its Network WATS and Ultra WATS plans. Page 6.

ISDN PROVES ITS WORTH in production use, living up to trial expectations. Page 6.

SUN'S NFS EXHIBITION shows a wide range of industry support for the network protocol. Page 6.

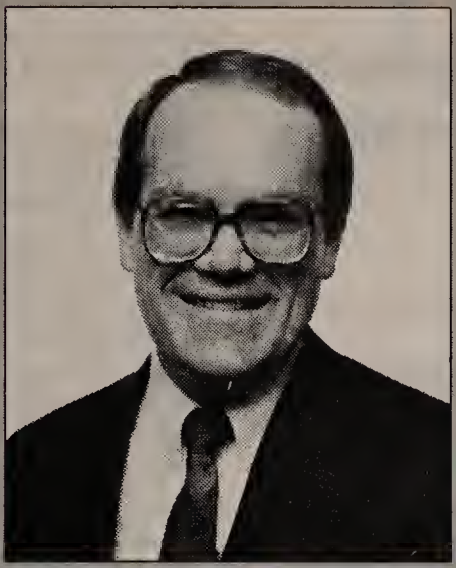
NEWSPAPER

FEATURE

Today's matrix switches blur product boundaries

By David Levin
Special to Network World

“PERTI



Larry L. Ehlers
Manager of Plant Engineering
Bendix/King, General Aviation
Avionics Division, Allied-Signal, Inc.

“Network World’s coverage is the most pertinent to our needs. That’s why it’s the only weekly I always take the time to read.”

Headquartered in Olathe, Kansas, Bendix/King General Aviation Avionics Division, a unit of Allied-Signal, Inc., is a major manufacturer of radios and flight instruments for airline, business, military and owner-flown aircraft. To effectively service over 100 airlines, all aircraft manufacturers, and about 700 dealers worldwide, the company relies heavily on its own telecommunications system. A system that’s largely the responsibility of Larry Ehlers, Manager of Plant Engineering.

“In addition to overseeing maintenance and construction, I manage all aspects of networking at our five Kansas facilities, including voice, data and videoconferencing. We utilize a T-1 backbone to connect somewhere between 200 and 300 data users and six videoconferencing rooms, while enabling 3,000 employees to access the network. Our videoconferencing capability alone has given us a competitive edge as it enabled us to speed up product development on a new airline collision-avoidance system and beat our competition to the marketplace.

“We’re also one of the first to collocate T-1 multiplexing equipment at a U.S. Sprint point of presence. Our savings here have been substantial. We’ve drastically reduced T-1 access costs, saved about $60,000 a year by gaining free access to the Sprint videoconferencing network, and saved another $10,000 or so annually on voice and data access lines.

“Bendix/King has long been a poineer in certain applications of telephony and networking. And *Network World* is one of our most important information sources. As a weekly, it gives us the latest on product availability, networking trends and industry leaders. And it helps us evaluate offerings from carriers and equipment vendors, playing a major role every time we buy. *Network World’s* coverage is the most pertinent to our needs. That’s why it’s the only weekly I always take the time to read.

“Especially useful to us is *Network World’s* ability to digest the vast amount of information continually coming out. With only four professionals dedicated to networking, we don’t have time to waste. And since we can’t be experts in all areas, we rely on *Network World* for expert coverage of the networking issues and applications of greatest interest to us.”

Network World. Its exclusive coverage delivers the most focused editorial on enterprise networking every week. Leading users like Larry Ehlers of Bendix/King understand how today’s technologies are shaping tomorrow’s business successes. That’s why, week after week, *Network World* is their most important information source for helping ensure a competitive edge.

NENT”

Airline reservation net flies into new age

continued from page 35

based SABRE Computer Services (SCS), developed NEW RES as a homegrown solution. The two were tested in separate trials earlier this year.

QIK RES won. Agents using QIK RES were 7% faster compared with a control group using the current command-line entry method of native SABRE. And reservation agents using NEW RES were found to be 15% slower than those using SABRE.

Given more development time, the in-house solution could have been made faster. But American reservation executives made the choice not to give more time to internal development because they believed the rapid deployment of the new system served a strategic purpose for American — being first with an easy-to-use system.

> The network upgrade began in May, when American Airlines launched a $25 million conversion to the QIK RES system.
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The network upgrade began in May, when American Airlines launched a $25 million conversion to the QIK RES system. The transition includes replacing thousands of dumb terminals with diskless Intel Corp. 80386 microprocessor-based IBM Personal Computers and upgrading a few hundred existing IBM Personal Computers. When the conversion is finished at the end of this year, the more than 4,100 terminals used by about 7,000 reservation agents in American's five regional reservation centers will be the same — all will be 386sx-based IBM Personal System/2 Model 55s.

"American's scheme goes beyond simply replacing terminals," says Chip Steinmetz, vice-president of data processing at Decision Technologies. Equipment replacement is only part of the upgrade. American also invested money to develop QIK RES applications for SABRE, paid salaries for SCS and Decision Technologies staff, and hired another vendor to do some development work.

The first glimmers of a QIK RES-like system appeared considerably earlier than the spring conversion. The movement began in mid-1987, when American replaced a few of its reservation dumb terminals with Personal Computers. At that time, the reservations unit began asking its staff what — if they could ask for anything at all — would they want the personal computers to do. The answer was to make their job easier. The QIK RES idea, in essence, is similar to the front ends of such on-line videotex services as CompuServe, Inc.'s CompuServe or Prodigy Services Corp.'s Prodigy.

> American invested money to develop QIK RES applications for SABRE, paid salaries for SCS and Decision Technologies staff, and hired another vendor to do some development work.
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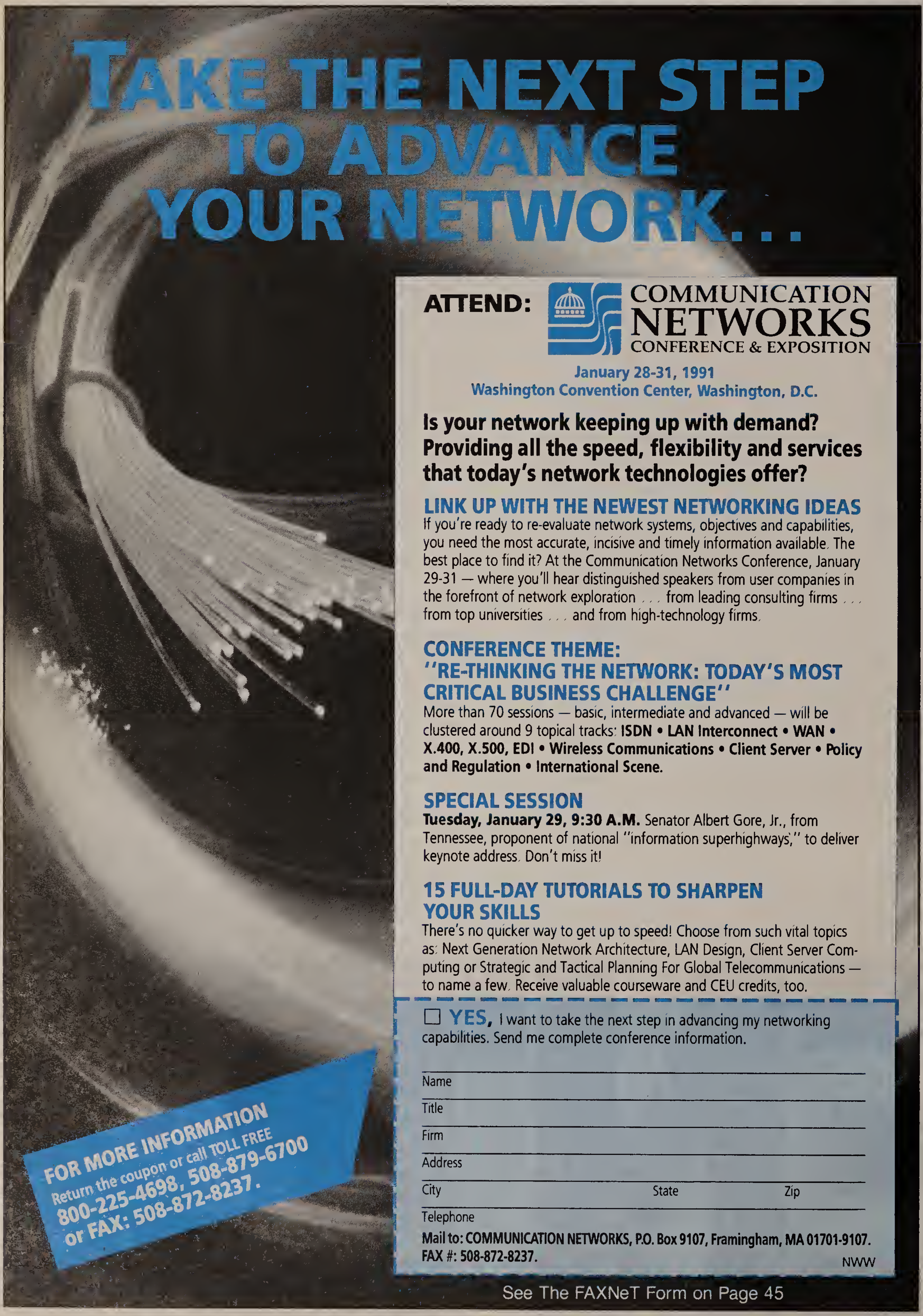
Stored on the local server, the software is downloaded to the reservation agent's diskless workstation, helping the agent access required data bases, make entries and answer questions without knowing the command language. In American's case, there were some 2,000 commands, called formats, that reservation agents had to know. "We kept hearing that agents didn't want to memorize the formats," says Dolly Wagner-Wilkins, a consultant with Decision Technologies.

But it was not until management realized that making reservation agents' lives easier — an intangible benefit to the company — could be combined with significant money savings that the movement toward QIK RES began to snowball.

$1.5 billion for SABRE

SABRE was introduced 27 years ago and processed its first 85,000 phone calls in the year that President Kennedy was assassinated. Today, American handles 120 million calls a year, and the SABRE network carries an average of 2,000 messages a second to the airline's central processing center in Tulsa.



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The network is continually being upgraded. Until three years ago, SABRE was based on more than 1,100 voice and data lines. Today, its backbone is based on 45 T-1 and T-3 circuits, which are fed from 14 connection sites.

American is one of the first and largest AT&T Tariff 12 users. Its contract, including international service and automatic number identification service, is worth $273 million to AT&T over five years.

As a result of its development, SABRE is an immense business asset to American and to its parent, AMR Corp. SABRE handles ticket reservations worth $2.5 billion annually, according to the airline's executives. And in terms of its penetration in travel agent offices, SABRE is preeminent.

The system is in about 30% of all U.S. travel agent offices, while United Air Lines' Apollo reservation network, which is run by the Covia Partnership, and other competitors have less than a 15% share each, says airline analyst Earl Gaskins, who covers the industry for Provident Capital Management Corp. in Philadelphia. Because of this market penetration, SABRE has enormous value. Gaskins estimates that if AMR ever wanted to sell it, SABRE would garner in the neighborhood of $1.5 billion.

The 7% solution

What QIK RES adds to this enormous network is speed. American has done fairly extensive productivity testing of agents using QIK RES contrasted with agents using the SABRE commands without the assistance of the new front end. The result was that QIK RES saved 7% of the time involved with the average call. This translates into a 7% savings on an 800-number phone call from the client to American and a reduction in instructions sent over the computer link.

> Because of its market penetration, SABRE has enormous value. Gaskins estimates that if AMR ever wanted to sell it, SABRE would garner in the neighborhood of $1.5 billion.
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But QIK RES does more. It also lets agents access American's different computer systems by pressing specific sequences of keys. For instance, in addition to their regular work of checking flight schedules and booking reservations on the SABRE computers, agents also can get frequent flyer information from another set of IBM computers and access a cluster of Digital Equipment Corp. VAXes for tour information.

QIK RES also checks reservations before they are transmitted. For example, it won't allow a message to be sent if an incorrect airport city code is entered. And finally, QIK RES can act as an improved marketing tool, reminding agents to offer special package deals that may be available and reminding them to ask whether the customer wants a rental car.

> QIK RES lets agents access American's different computer systems by pressing specific sequences of keys.
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QIK RES runs on 4M bit/sec token-ring LANs with a maximum of 60 diskless workstations per LAN. For example, the Southern Reservation Office, with 1,664 stations, has 30 servers.

In all reservation centers, each server has three cards. One connects to the LAN, and the other two connect to adjacent servers on each side of that server. This daisy-chaining of servers helps to provide fault tolerance.

Each of American's more than 60 token rings has a server running Novell, Inc.'s NetWare 2.15c network operating system. Within each reservation center, the Novell file servers are internally bridged to one another. Workstations on each LAN send commands to the server and through three gateways — one for each computer system that can be accessed — to American's Tulsa processing site.

Because some of the QIK RES software is downloaded but other portions, including some communications software, continue to reside on the server, QIK RES can be considered a client/server architecture,

(continued on page 54)

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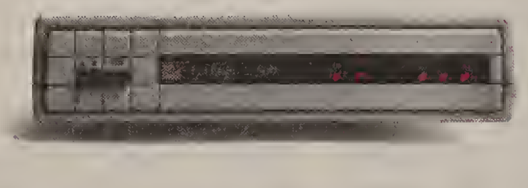

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The steel industry has historically been driven more by muscle than by technology. It is, therefore, especially notable when an outstanding networking achievement is made by a maintenance organization at a steel company.

Allegheny Ludlum Corp.'s #9 Maintenance Division is using its networked maintenance tracking application to decrease steel mill downtime 18% and improve the company's bottom line.

The Maintenance Information Collection System (MICS) is the shining star of 340 applications that the #9 Maintenance Division provides its users over a highly redundant series of local-area networks, dubbed the Maintenance Computer System.

At its plant in Brackenridge, Pa., Allegheny Ludlum converts scrap metal to various forms of usable steel. The #9 Maintenance Division, a $50 million-per-year operation, maintains various electrical facilities within the plant.

To help in that effort, it developed MICS, which runs on a central file server attached to an Arcnet LAN. The system receives data on mechanical or electrical problems from plant foremen via personal computers.

MICS logs all the problems and conducts analyses that help users detect trouble spots before a failure occurs, according to Gary Fair, maintenance system manager at Allegheny Ludlum. He notes that MICS has decreased downtime by 38% for the strip mill, a $500 million piece of equipment.

Such productivity improvements translate to dramatic cash savings.

Internal studies at Allegheny Ludlum have shown that each $1,000 saved in maintenance costs translates to $24,000 in savings garnered by avoiding equipment failures that cause productivity losses.

To ensure that the network supporting MICS stays operable, the #9 Maintenance Division built it using seven interconnected backbone LANs, three of which operate in parallel. These seven LANs support six subnets, and that number is expected to grow to more than 20 by next spring, Fair says.

The company plans to upgrade the backbone nets to Thomas-Conrad Corp.'s 100M bit/sec TCNS fiber-optic-based LAN.

In addition, more than 20 file servers will be added to support specific applications and provide redundancy.

Although there's a desire to avoid waste, there's still a need for haste, Fair says. As he puts it, "We're trying to get into the 21st century before it gets here."

— Paul Desmond

With revenues of $225 million, American Management Systems, Inc. (AMS), an information technology consulting and systems engineering firm in Arlington, Va., is a midsize but fast growing company. It is also very decentralized, which it found to be a factor in the networking difficulties it faced.

Two years ago, AMS, which has corporate offices in more than 20 U.S. and seven foreign cities, began building a network to interconnect a rapidly growing number of LANs. An objective in designing the network was to preserve existing equipment as well as the company's decentralized management style, says Ed Ward, the firm's network services manager.

Now that the interconnection has been made, AMS has a 4M bit/sec token-ring backbone that supports about 30 4M bit/sec token-ring departmental networks running Novell, Inc.'s NetWare 286 and 386 operating systems, as well as several Ethernet and Arcnet LANs. The remote LANs are linked to the headquarters backbone ring via a Microcom, Inc. gateway and leased lines running at 9.6K bit/sec to T-1 speeds.

ams American Management Systems, Inc.

The network lets more than 2,500 users with a variety of workstations exchange files and access an IBM mainframe as well as a Digital Equipment Corp. VAX processor.

Ward says the new network has already enabled AMS to save about $400,000 this year. The savings are the result of deferring a $300,000 upgrade to the company's IBM front-end processors. Also, AMS will not have to buy additional IBM communications controllers, which would have cost $90,000. And standardizing the company's wiring architecture is expected to reduce wiring costs by more than 40%.

In addition, AMS replaced a variety of electronic mail networks with a single corporate E-mail system based on cc:Mail, Inc.'s cc:Mail package.

"Our network lets our consultants stay close to our clients but gives them access to the expertise and resources of the company," Ward says.

— Wayne Eckerson

When big networks are planned, there's usually an announcement. When big networks are completed, their managers seldom spare a moment to publicize that fact. But surely there should have been some fanfare when Troy, Mich.-based K mart Corp. recently completed its extensive satellite network.

The nationwide retail chain now has consistent communications to 2,200 stores using very small aperture terminals. Four years in the making, the network cost $54 million to build.

Although they have been eschewing publicity — with the exception of applying for the User Excellence Award — K mart executives are proud of their creation and quick to point out that their network, scheduled for completion this month, has been quite a bargain.

The data and video communications net has helped K mart provide better customer service and foster closer ties between headquarters and remote retail sites, according to Walt Bzdok, K mart's senior director of corporate communications and systems reliability.

The VSAT net uses X.25 packet switching to link in-store point-of-sale terminals and personal computers on local-area networks to K mart's data center and satellite earth station in Troy.

K mart's satellite network handles most of the company's data communications traffic, Bzdok says. It supports such applications as on-line credit authorization, which has helped K mart speed the checkout process, and electronic data interchange, which ensures that store shelves are stocked with the merchandise shoppers want.

The net enables K mart's management to broadcast television programs to its stores, providing the staff with information on various merchandising, sales training and customer care subjects.

"When we look back on how we have done in the '90s," Bzdok says, "the impact of video on the company will far exceed even the customer service benefits of on-line credit authorization and the electronic interchange of data through the company."

— Bob Brown

For the better part of a century, brokerage firm Edward D. Jones & Co. has been serving securities investors, first throughout the Midwest and then nationally.

As its market changed, so did the company's communications needs. That was why, in late 1988, telecommunications manager Glenn Hull and his 40-person communications staff took Edward D. Jones' customer service mission into the space age by launching a very small aperture terminal satellite network that is slashing network expenditures and improving customer service.

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Edward D. Jones uses the VSAT net to shuttle data at 9.6K bit/sec between its nearly 1,400 branch offices in 45 states and corporate headquarters in Maryland Heights, Mo.

Data flows from dumb terminals on brokers' desks, via VSAT links and a master earth station, to an IBM mainframe in corporate headquarters that runs all office automation, customer information and trading applications used in the company's branch offices.

According to Hull, this data net is more reliable and costs about 10% less to operate than the terrestrial-based multidrop network that preceded it. But more importantly, it enables Edward D. Jones to run one-way video broadcasts for about six to eight hours per week.

The video capability is basically free because the VSAT net is cost-justified by data alone.

Video improves business operations by letting Edward D. Jones conduct investment seminars for customers, train company employees and broadcast significant corporate announcements to all its offices.

"We look at video as a way of serving our offices as if we were in the same room with them," Hull says.

Hull adds that to his knowledge, no other brokerage firm has gone as far as Edward D. Jones in using VSAT technology to support its business.

"A number of firms use video, while others run a few data applications [over VSAT links]," he says. "But I would say we are unique in using VSAT to support 100% of our business activity."

— Barton Crockett

When Steven Relyea started building a local-area network at the University of California, San Diego (UCSD) 2½ years ago, he envisioned an Ethernet backbone supporting 15 departments.

What Relyea, vice-chancellor of business affairs at UCSD, did not anticipate was a surging demand for LAN communications among campus users.

Driven by this demand, Relyea was forced to upgrade his plans, transforming the LAN into a sprawling backbone, dubbed SanDNet, that supports roughly 75 file servers and 1,300 to 1,400 users on Ethernets running Novell, Inc.'s NetWare.

"And we're adding a net a month at this stage," he says. While hooking all of these new LANs to the backbone, SanDNet is also migrating from Ethernet over broadband coaxial cable to Ethernet over fiber. Eventually, it will migrate to the Fiber Distributed Data Interface.

The university uses a 2M bit/sec digital microwave connection to link the main campus to outlying locations using Transmission Control Protocol/Internet Protocol and Novell's Internetwork Packet Exchange. Those links will be upgraded in the future to run at 10M bit/sec.

SanDNet has helped eliminate inefficient paper-based communications over UCSD's lush 1,200-acre main campus and several remote sites, according to Relyea.

In many cases, delivery of mail between departments used to take two or three days and often would include computer printouts that had to be rekeyed into another computer.

"The net has completely changed that process," Relyea says. "The No. 1 application on it is electronic mail. I personally get 40 to 50 messages a day."

Users have been pleased with the improved productivity and begun to develop their own applications, Relyea says. For example, personnel representatives in the campus library collaborated with the campus personnel office to develop documents that could be transferred electronically.

The ongoing expansion of UCSD required the installation of LANs to attract and retain top faculty, staff and students, Relyea says.

"This was simply a matter of survival as well as getting as much productivity as possible out of our staff and keeping this place as competitive as possible," he says.

Only four or five full-time staff members are dedicated to LAN management and administration, with individual departments responsible for appointing part-time or hiring full-time LAN administrators.

UCSD uses Cabletron Systems, Inc.'s Remote LANview management system for controlling the network, but it is likely to migrate to a combination of that system and Cabletron's Simple Network Management Protocol-based Spectrum system, according to Bob Green, manager of data communications at the university.

— Tom Smith

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Airline net flies into new age

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one of the first designed specifically for the airline industry. American has five regional reservation centers, all but one of which have already been converted to the LAN architecture and QIK RES. The Western Reservation Office in Los Angeles, with 574 reservation stations, will be relocated to Tucson, Ariz., in the second quarter of next year and, hence, has not been converted.

The others are: the Central Reservation Office in Cincinnati, with 574 reservation stations; the Eastern Reservation Office in Hartford, Conn., with 581 stations; the Southern Reservation Office in Dallas, with 1,664 stations; and the Southeastern Reservation Office in Cary, N.C., with 1,348 stations.

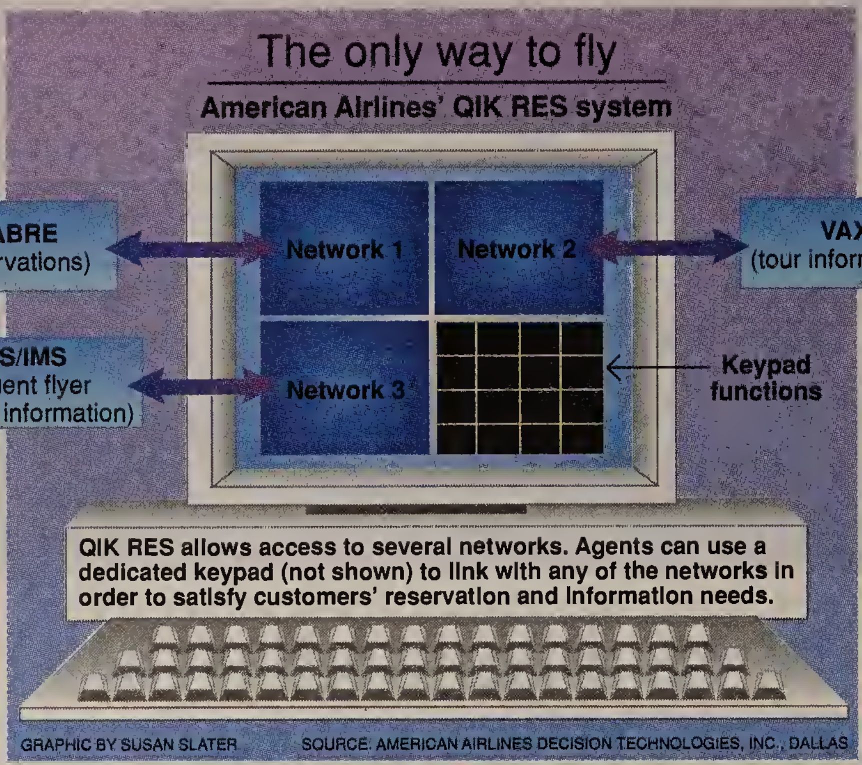
Keeping up with the times

Some might consider American's technology investment overly expensive. There's little that is downscale about its equipment. All 4,100 terminals and Personal Computers will be converted or upgraded to diskless PS/2 Model 55s with 4M bytes of random-access memory and will feature 16-in. MultiSync super video graphics adapter monitors from NEC Corp.

Another factor in the decision to move to an easier way of making reservations is that it may soon become difficult to hire reservation agents. Based on studies such as "Workforce 2000," prepared by the Hudson Institute, an Indianapolis-based research house, American believes it will be faced with a shrinking pool of technically skilled workers in a few years.

"We decided we needed to make the system easier to use," says Susan Starkie, project manager for reservations at American.

To make QIK RES simpler, Decision Technologies used a team of an industrial engineer and subject matter experts (SME) to develop the reservation application for the system. Susan Tonjes, a senior consultant with Decision Technologies, was the industrial engineer for this project, and several people contributed their expertise as SMEs.


The only way to fly

American Airlines' QIK RES system

QIK RES allows access to several networks. Agents can use a dedicated keypad (not shown) to link with any of the networks in order to satisfy customers' reservation and information needs.

GRAPHIC BY SUSAN SLATER SOURCE: AMERICAN AIRLINES DECISION TECHNOLOGIES, INC., DALLAS

One example of how reservation specialists participated in the process is the QIK RES keypad, which is designed so that the most frequently used keys are on the outside, where they are easier to reach.

Justifying $25 million

American's Decision Technologies is like an enterprise subsidiary or think tank. While its main job is to develop products for its parent, it also can do work for other companies.

"We provide operations research and decision management services to many companies," says Thomas Cook, president of Decision Technologies. "We realized QIK RES' potential, went to management and asked for money to do a feasibility study."

Naturally, there had to be proof that the change saved money, so a test was scheduled. A group at SCS developed a system that would compare other types of interfaces. QIK RES used a quad screen format; the test would compare that with pull-down menus and split screens.

The two teams were pitted against the straight SABRE command set in separate tests conducted in 1989. An eight-week test of QIK RES vs. native SABRE was conducted at the Southeastern Reservation Office in July. It was from this test that American was able to determine that QIK RES made a conservative time saving of 7% as compared with agents using SABRE without any assistance. The test of the internally developed system showed that it performed more slowly than unaided SABRE.

Selling upper management

The next step was to get funding for full implementation. As with any networking project that requires a large capital investment, Decision Technologies had to get the $25 million funding for QIK RES approved by upper management.

"At American Airlines, you go through the same funding process whether you want to spend $1 million or $25 million," says James Verges, American's managing director of reservations. A proposal was put together that outlined the costs and the potential savings of converting to QIK RES.

The expenses included the $20 million required to upgrade or replace all of the workstations and dumb terminals used in the regional reservation centers. American also paid $550 thousand to Qantas for the source code to QIK RES. The rest of the $25 million included salaries for SCS and Decision Technologies staff, and money to another vendor for some development work.

To justify spending the money, the anticipated savings needed to be tabulated. The project was designed with a 2½-year return on investment. "It looks like the actual return will be closer to 18 months," Verges says.

How does American calculate this payback? It expects to save $9.1 million in labor costs during 1991 by reducing the average time of a call, thus using fewer people to answer calls.

An additional $5.2 million will be saved next year on voice communications expenses because of QIK RES, Starkie says. American will also save $1.4 million in 1991 on facilities usage. Another $600,000 will be saved on computer processing by an average of one less SABRE transaction per call.

The total savings derived from using QIK RES will be about $16.5 million in 1991. And Starkie says projections show the savings will grow to $22.5 million in 1994.

Despite tough economic times and tight budgets, American took a $25 million gamble to change the way the company's reservation agents network to and interact with SABRE. QIK RES is improving the reservation sales offices' operations by reducing the time it takes to process a sales call. It also allows the agents to concentrate on their main job — selling — by reducing their need to memorize long strings of characters.

Intelligent investment

In short, this is a good example of an intelligent networking investment. With a payback period for QIK RES of about 2 years and a boost in productivity, it appears that American has the opportunity both to save and make money through new technology.

It's grim times for the old terminals. They sit in corridors waiting for someone to decide their fate. Most likely, they will be scrapped. By contrast, American will continue to reap the benefits of the reservation network that these terminals helped create.

A few years from now, when the terminals are gone and forgotten, QIK RES is likely to continue to be a strategic business weapon for American. Verges and others in his group are talking about using QIK RES to translate responses from SABRE to the reservation agents, and this could save additional time. But at the moment, SABRE only translates commands in the other direction.

This simplification of the reservation process could help turn SABRE into an even more potent business tool. Although SABRE is the most popular of reservation systems among travel agents, its extensive command structure still requires training, which costs time and money. Hence, the easy-to-use QIK RES approach is likely to be popular, possibly winning an even greater market share for SABRE.

Money in the bank

continued from page 44

tional merchant fees.

"Business customers want certain automated access to our systems so they can get certain information back from us," Witkowski says. "They will change banks if we don't provide that type of service."

The bank provides an on-line service to let small and large businesses verify their account balances and other financial data. This helps the businesses determine how much money they must leave in their non-interest-bearing checking accounts to cover payments that day and how much they have to invest elsewhere. That includes investment in the bank's certificates of deposit.

Larger commercial customers dial into the bank's Stratus Computer, Inc. minicomputer via an X.25 value-added network. Customers can obtain account information and leave instructions for the bank to electronically move funds between accounts. Smaller customers that can't afford the on-line service can dial into a voice response unit and perform similar functions from a telephone keypad.

Top projects

TSD cannot rest on its laurels. Instead, the division is working on no less than 15 network projects ranging from using Integrated Services Digital Network protocols on a private network to ensuring that everyone in the company understands and uses the corporate dialing plan.

One major project now under discussion is the formation of a consulting business that will enable TSD to build and operate networks for other banks or users in other industries, as well as sell excess capacity on its network.

Another project involves TSD and the bank's data processing department. The two are working together to develop software that will enable microcomputers throughout the bank to access data from the bank's various data bases and present it on a single screen, a task that can't be easily accomplished today.

Because the bank has data stored in separate data bases, end users must access each data base, extract the data needed and then manually merge it or rely on specialized printed reports.

The bank is also looking into testing a multipoint radio system that promises to eliminate the multidrop leased lines that link branches to the nearest data concentration center.

The bank is negotiating with Multipoint Networks of San Carlos, Calif., to test the firm's data radios; these devices act like a modem but broadcast data through the air.

Although specifics of the test have not been announced, the bank could install a master radio at a data concentration center that is able to poll slave radios at branch locations.

Slaves would receive data from terminals in the branches and then broadcast it within the 900-MHz spectrum to the master radio. The master radio would pass it via a cable into a backbone network circuit.

While Multipoint Networks' radios are one option, TSD's Rees says there are other technologies such as low-orbiting satellites that the bank can examine. "I'm not looking to bypass the local carrier," he says. "My problem is that they can't give what I think I want."

The division's approach is to continually examine how new technologies can be applied to support banking services. Among its networking plans are expanding its international links.

First National is a subsidiary of one of Ireland's largest banking companies, Allied Irish Banks PLC, and the parent company has expressed a need for data links to the U.S. TSD has already installed links between Baltimore and Allied Irish locations in Chicago, New York and Dublin, Ireland.

Both in the U.S. and Ireland, the stress has been on technology.

"[Our] executive management believes technology is the right course to take," TSD's Spies says. "We believe — and I think it's a good belief — that the economy will turn around. If we have the electronic banking products available and the technology installed when the turnaround occurs, we're going to be ready to bring the customers in our doors."

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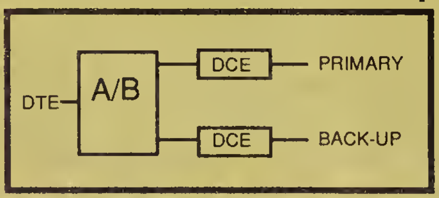

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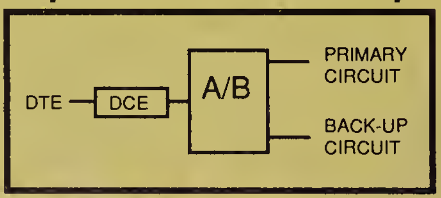

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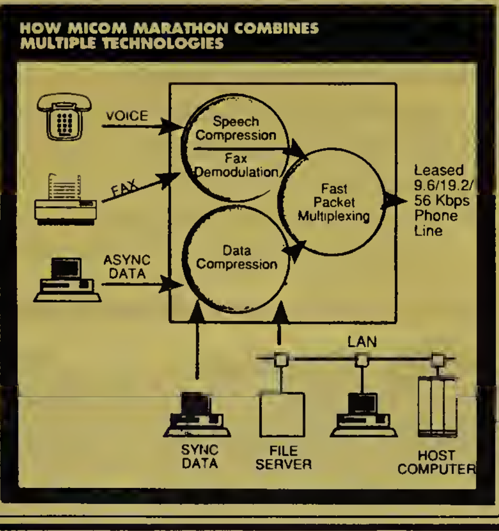
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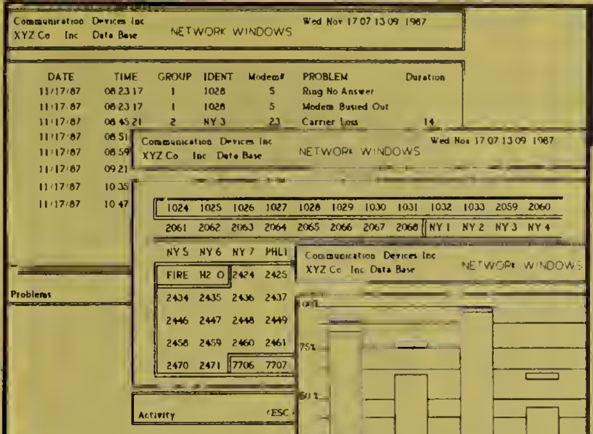

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Communication  Devices Inc                          Wed Nov 17 07 13 09 1987
XYZ Co   Inc   Data Base          NETWORK WINDOWS

  DATE      TIME     GROUP  IDENT   Modem#   PROBLEM            Duration
11/17/87  08 23 17     1     1028      5     Ring No Answer
11/17/87  08 23 17     1     1028      5     Modem Busied Out
11/17/87  08 45 21     2     NY 3     23     Carrier Loss           14
11/17/87  08 51
11/17/87  08 59
11/17/87  09 21
11/17/87  10 35
11/17/87  10 47

Problems

Communication  Devices Inc                          Wed Nov 17 07 13 09 1987
XYZ Co   Inc   Data Base          NETWORK WINDOWS

 1024  1025  1026  1027  1028  1029  1030  1031  1032  1033  2059  2060
 2061  2062  2063  2064  2065  2066  2067  2068  NY 1  NY 2  NY 3  NY 4
 NY 5  NY 6  NY 7  PHL1
 FIRE  H2 O  2424  2425
 2434  2435  2436  2437
 2446  2447  2448  2449
 2458  2459  2460  2461
 2470  2471  7706  7707

Activity                  <ESC>

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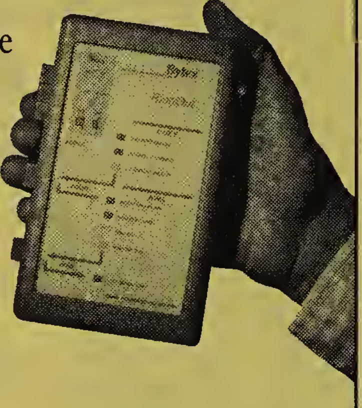

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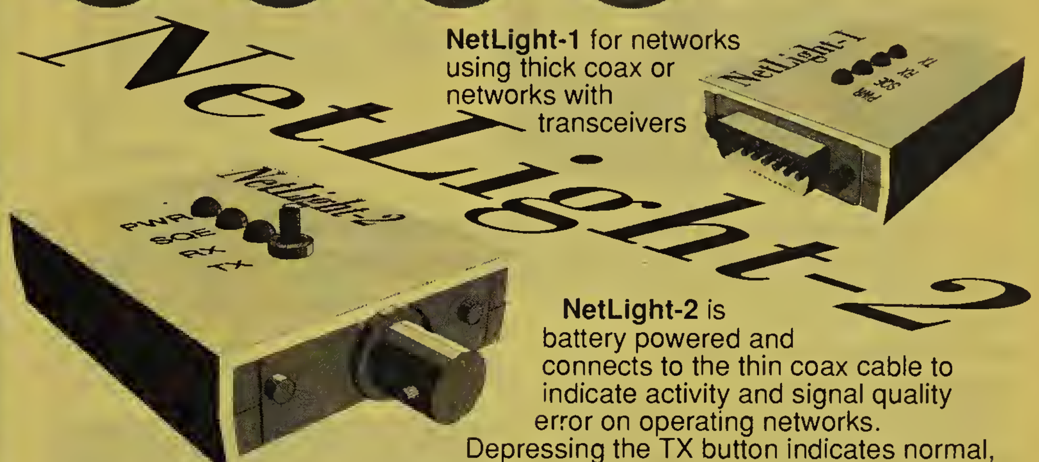

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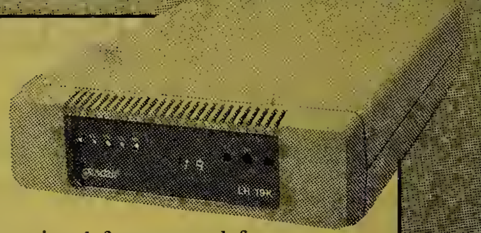

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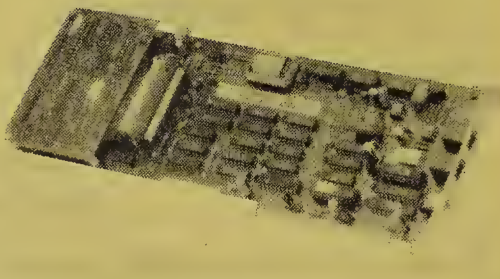

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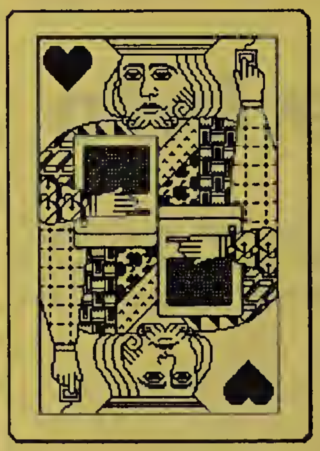

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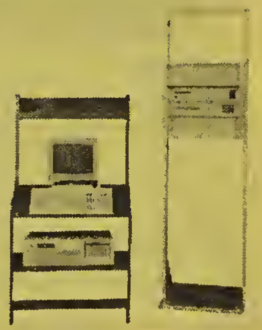

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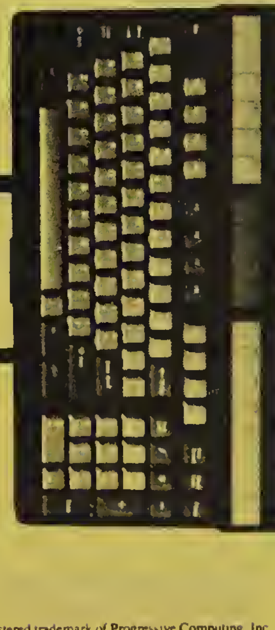

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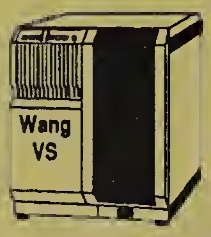

PC Local Area Networks are here to stay, and changes are inevitable.

You could hitch your VS resources to PCs, LANs and Macintoshes by adding Lightspeed NVS. The results: regained control of PC resources, powerful applications made available to more people, and improved work group productivity. Plus no loss of investment.

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You'll need to move all the data off the VS, convert documents to new word processing formats, and somehow run the primary VS procedures while you're in the process of migrating away. You'll want to run both systems parallel for awhile, too.

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AT&T makes a myriad of connecting hardware for your premises, all of which are ideal for local area and voice/data networks, and available from Wise Components.

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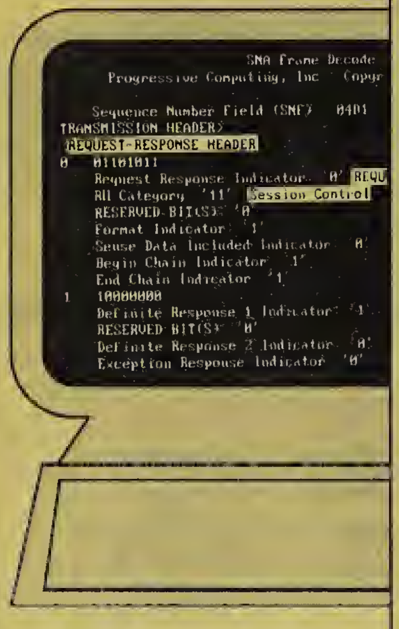
A PC-based protocol analyzer that speaks your language. Plain English!



```
                      SNA Frame Decode
   Progressive Computing, Inc    Copyr

  Sequence Number Field (SNF)   0401
TRANSMISSION HEADER>
REQUEST-RESPONSE HEADER
0   01101011
    Request Response Indicator  '0' REQU
    RU Category  '11'  Session Control
    RESERVED BIT(S) '0'
    Format Indicator  '1'
    Sense Data Included Indicator  '0'
    Begin Chain Indicator  '1'
    End Chain Indicator  '1'
1   10000000
    Definite Response 1 Indicator  '1'
    RESERVED BIT(S)  '0'
    Definite Response 2 Indicator  '0'
    Exception Response Indicator  '0'
```

Now you can analyze data and zero in on errors more quickly. The LM1 Protocol Analyzer gives you easy-to-read decodes spelled out in plain English. It uses exact language from the standards for X.25, SNA, QLLC, and Q.931 protocols.

With the LM1, you don't miss a bit. It displays and explains every bit in a frame. It also highlights key details.

In-depth analysis in plain English. To see how the LM1 can expand your test equipment vocabulary, give us a call at (708) 574-3399.

Progressive Computing

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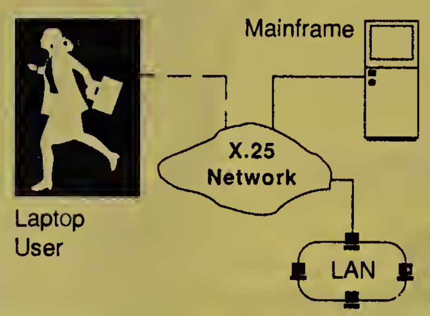

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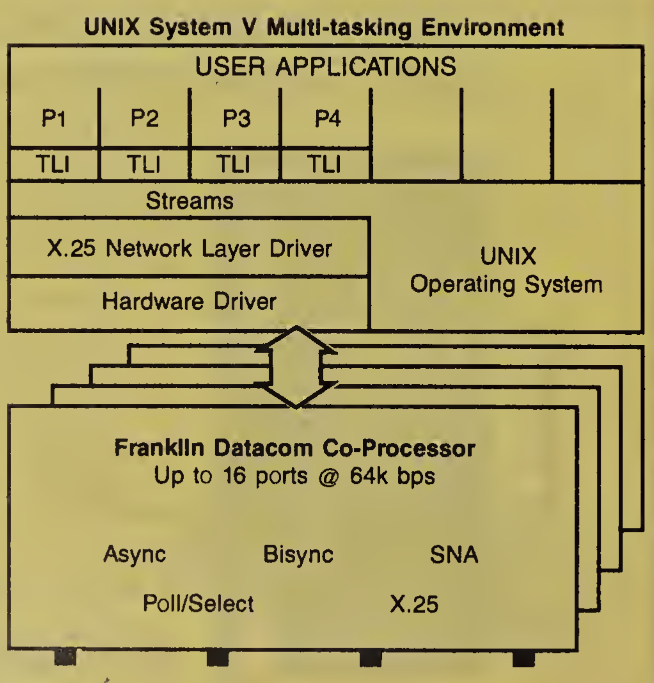

Franklin Datacom Inc.,
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733 Lakefield Road,
Westlake Village, CA 91361.

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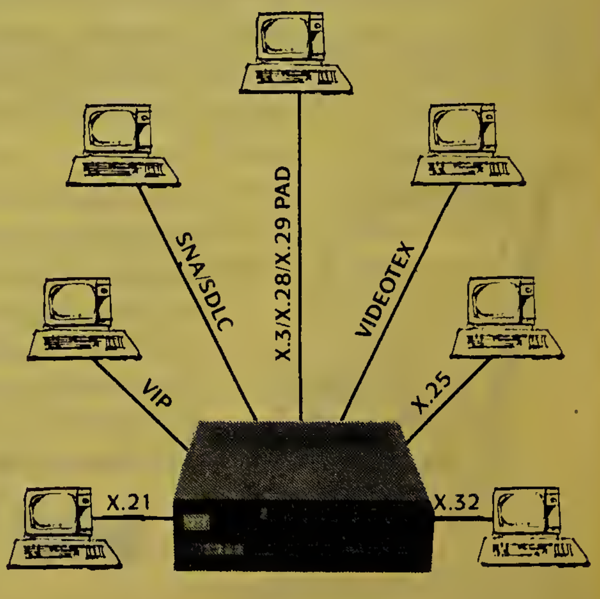
The PASS 25 supports multiple protocols including CCITT X.25, X.21, X.32, Videotex PAD, CCITT X.3, X.28 and X.29 PAD, VIP and SNA/SDLC, V.24 V.28, V.35, and V.11 physical line interfaces are available. The unit handles from 2 to 18 ports with the option of upgrading in 2 channel increments. To increase your networking options, call OST today!



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C. Please Answer ALL Questions, Sign & Date the Form.

1 Industry: (check one only)

01. ☐ Manufacturers (other than computer/communications)
02. ☐ Finance/Banking
03. ☐ Insurance
04. ☐ Real Estate
05. ☐ Healthcare Services
06. ☐ Legal
07. ☐ Hospitality
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16. ☐ Aerospace
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18. ☐ Carriers
19. ☐ Interconnects
20. ☐ Manufacturers (Computer/Communications)
21. ☐ VAR/VAD/Systems House
22. ☐ Distributor, Computer Related
23. ☐ Distributor, Communications Related
24. ☐ Other ____________

2 Job function: (check one only)

1. ☐ Networking Management (Responsible for both voice & data)
2. ☐ MIS Management (VP, Dir., Department Head)
3. ☐ Corporate Management (Chairman, President, Owner, General Manager, CEO, CIO, VP)
4. ☐ Data Communications Management (Responsible for data only)
5. ☐ Telecommunications Management (Responsible for voice only)
6. ☐ Financial Management
7. ☐ Engineering Management
8. ☐ Consultant (Independent)
9. ☐ Other ____________

3 What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check one only)

1. ☐ Enterprise Wide (Organization/Subsidiary/Division)
2. ☐ Multi Enterprise (Consultants)
3. ☐ Department Wide

4 What is the total number of sites for which you have purchase influence?

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1

5 Your primary responsibility: (check one only)

1. ☐ Both Data + Voice
2. ☐ Data Networking Only
3. ☐ Voice Networking Only
4. ☐ None

6 Which transmission media do you use in your network: (check all that apply)

Public:
01. ☐ Switched-Based (DDD, Wats, Megacom, etc.)
02. ☐ Leased Line (not including T-1)
03. ☐ T-1
04. ☐ Fractional T-1
05. ☐ T-3/SONET
06. ☐ Broadband
07. ☐ ISDN

Private:
08. ☐ Satellite
09. ☐ Microwave
10. ☐ Fiber Optic

7 Is your network: (check all that apply)

LOCAL AREA NETWORK
1. ☐ Local (within building)
2. ☐ Local (in a campus environment)

WIDE AREA NETWORKS
3. ☐ International
4. ☐ National
5. ☐ Regional (several states)
6. ☐ Metropolitan

8 What is your network architecture? (check all that apply)

1. ☐ SNA
2. ☐ DECNET
3. ☐ OSI
4. ☐ GOSIP
5. ☐ MAP/TOP
6. ☐ TCP/IP
7. ☐ DCA (UNISYS)
8. ☐ OTHER ____________

9 What is your LAN Operating System? (check all that apply)

01. ☐ 3COM (3+, 3+open)
02. ☐ LOCAL TALK (APPLETALK)
03. ☐ BANYAN (VINES)
04. ☐ DCA (IRMALAN)
05. ☐ IBM (LAN Server)
06. ☐ IBM (PC LAN PROGRAM)
07. ☐ MICROSOFT (LAN MANAGER)
08. ☐ UNGERMAN BASS (NET/1)
09. ☐ NOVELL (NETWARE)
10. ☐ TOPS
11. ☐ PROTEON (PRONET)
12. ☐ OTHER ____________

10 What is your LAN environment? (check all that apply)

1. ☐ 4M TOKEN RING
2. ☐ 16M TOKEN RING
3. ☐ ARCNET
4. ☐ ETHERNET
5. ☐ STARLAN
6. ☐ FDDI
7. ☐ LOCALTALK
8. ☐ OTHER ______

11 Which operating systems do you utilize? (check all that apply)

1. ☐ IBM DOS (VSE)
2. ☐ UNIX
3. ☐ OS/2
4. ☐ OS/2 Extended Edition
5. ☐ MVS
6. ☐ VM
7. ☐ VMS
8. ☐ XENIX
9. ☐ PICK
0. ☐ OTHER ____

12 Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAINFRAMES A	MINIS B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. BULL HN IS		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

LIST NUMBERS ONLY

13 Please indicate by vendor the number of microcomputers/workstations:

A. Presently installed in your network.
B. The epproximete quantity you plan to install in the next 12 months.

MICROCOMPUTER/ WORKSTATION/ VENDOR	PRESENTLY INSTALLED A	PLAN TO INSTALL NEXT 12 MONTHS B
01. PCs based on 80286 chip		
02. PCs based on 80386 chip		
03. PCs based on 80486 chip		
04. 8086/8088		
05. Macintosh		
06. RISC-based workstations		
07. UNIX-based workstations		

LIST NUMBERS ONLY

14 What is your planned PC standard? (check all that apply)

1. ☐ EISA
2. ☐ MCA
3. ☐ NUBUS (MACINTOSH)

15 For which areas outside of the U.S. do you have purchasing influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East

16 Check ALL that apply in columns A and B

A) I am presently involved in the purchase process for the following products/services:

B) I plan to purchase the following products/services in the next 12 months:

Presently Involved A	Plan to Purchase B	
A	B	LOCAL AREA NETWORKS:
01. ☐	☐	Local Area Networks
02. ☐	☐	LAN Servers
03. ☐	☐	LAN Services
04. ☐	☐	Cables, Connectors, Baluns
05. ☐	☐	Bridges, Routers, Gateways
06. ☐	☐	UPS
07. ☐	☐	LAN Storage Devices
A	B	COMPUTERS/PERIPHERALS:
08. ☐	☐	Micros
09. ☐	☐	Minis
10. ☐	☐	Mainframes
11. ☐	☐	Front End Processors
12. ☐	☐	Terminals
13. ☐	☐	Laptops
14. ☐	☐	Printers
15. ☐	☐	Work Stations
16. ☐	☐	Cluster Controllers

(continued on next column)

Presently Involved A	Plan to Purchase B	
A	B	SOFTWARE:
17. ☐	☐	Network Management
18. ☐	☐	Micro to Mainframe
19. ☐	☐	Network Security
20. ☐	☐	Call Accounting
21. ☐	☐	Distributed DBMS
22. ☐	☐	Communications Software
23. ☐	☐	Applications Software
24. ☐	☐	Network Operating Systems Software
25. ☐	☐	EDI Software
26. ☐	☐	E-Mail Software
A	B	DATA COMMUNICATIONS:
27. ☐	☐	Modems (over 9.6kbps)
28. ☐	☐	Modems (under 9.6kbps)
29. ☐	☐	T-1 Multiplexers
30. ☐	☐	T-3 Multiplexers
31. ☐	☐	Fractional T-1 Multiplexers
32. ☐	☐	Data Switches
33. ☐	☐	Matrix Switches
34. ☐	☐	Packet Switches
35. ☐	☐	Protocol Converters
36. ☐	☐	Network Management Systems
37. ☐	☐	Terminal Emulation Boards
38. ☐	☐	Facsimile Machines
39. ☐	☐	Diagnostic Test Equipment
40. ☐	☐	DSU/CSU
41. ☐	☐	Data Security
42. ☐	☐	Data Compression Equipment
43. ☐	☐	Network Adapter Boards
44. ☐	☐	Microwave
45. ☐	☐	Messaging Software
A	B	TELECOMMUNICATIONS:
46. ☐	☐	PBXs (over 1000 lines)
47. ☐	☐	PBXs (200 - 1000 lines)
48. ☐	☐	PBXs (under 200 lines)
49. ☐	☐	Key Systems
50. ☐	☐	Automatic Call Distributors
51. ☐	☐	Voice Messaging Systems
52. ☐	☐	Video Teleconferencing Systems
A	B	SERVICES:
53. ☐	☐	Switched Voice
54. ☐	☐	Dedicated Leased Line
55. ☐	☐	T-1
56. ☐	☐	T-3
57. ☐	☐	Digital Data
58. ☐	☐	Packet Switched
59. ☐	☐	Centrex
60. ☐	☐	Central Office Lan
61. ☐	☐	Satellite
62. ☐	☐	On-Line Information
63. ☐	☐	ISDN
64. ☐	☐	EMail
65. ☐	☐	VSAT

17 Estimated value of networking equipment and services:

A: Which you helped specify, recommend or approve in the last 12 months?

B: Which you plen to help specify, recommend or epprove In the next 12 months?

A	B	
1 ☐	☐	$100 million and over
2 ☐	☐	$50 - $99.9 mill
3 ☐	☐	$25 - $49.9 mill
4 ☐	☐	$20 - $24.9 mill.
5 ☐	☐	$10 - $19.9 mill.
6 ☐	☐	$5 - $9.9 mill.
7 ☐	☐	$1 - $4.9 mill.
8 ☐	☐	$500,000 - $999,999
9 ☐	☐	Under $500,000

18 Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ over $10 billion
2. ☐ $1 to $9.9 bill.
3. ☐ $500 to $1 bill.
4. ☐ $100 to $499.9 mill.
5. ☐ $50 to $99.9 mill.
6. ☐ $10 to $49.9 mill.
7. ☐ $5 to 9.9 mill.
8. ☐ under $5 mill.

19 Estimated number of employees for your entire corporation:

1. ☐ over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ under 500

20 Which of the following ISDN products do you plan to purchase in the next 12 months? (check all that apply)

1. ☐ Basic Rate Interface Terminal Adapters
2. ☐ Primary Rate Interface Equipment
3. ☐ Voice/Data terminals
4. ☐ Voice-only terminals
5. ☐ Data-only terminals

21 From which of the following vendors will you consider buying your PBX/Central Office Switch? (check all that apply)

A PBX	B COS	
A ☐	☐	AT&T
B ☐	☐	ALCATEL
C ☐	☐	ERICSSON
D ☐	☐	FUJITSU
E ☐		HARRIS
F ☐		HITACHI
G ☐		ROLM
H ☐		INTECOM
I ☐		MEMOREX TELEX
J ☐		MITEL
K ☐	☐	NEC
L ☐	☐	NORTHERN TELECOM
M ☐		SAMSUNG
N ☐	☐	SIEMENS
O ☐		STROMBERG-CARLSON
P ☐		TOSHIBA
Q ☐	☐	OTHER ____________

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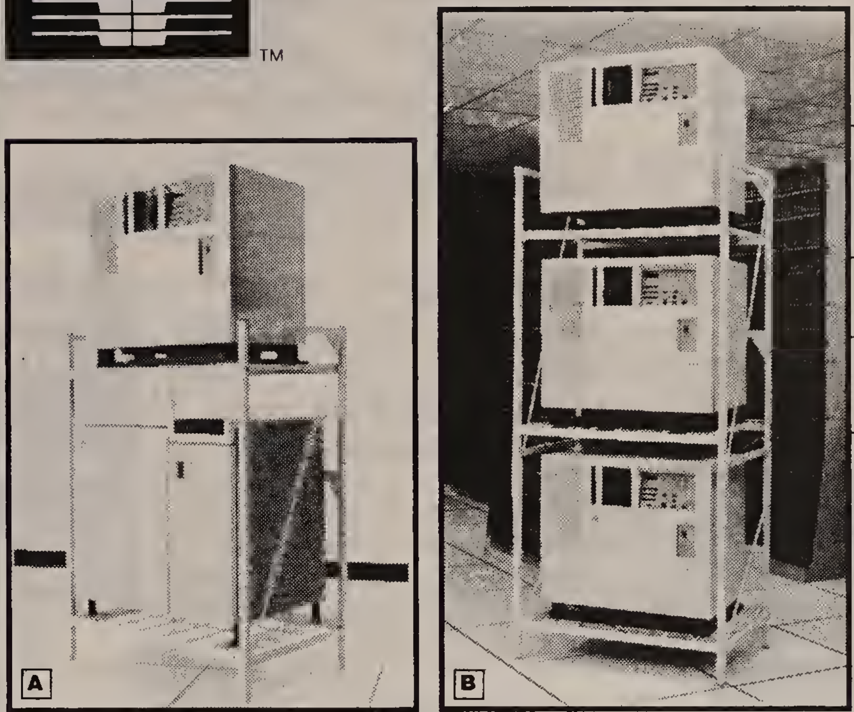

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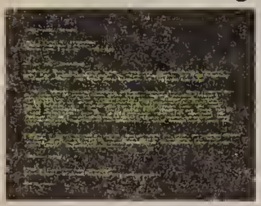

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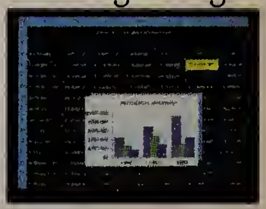

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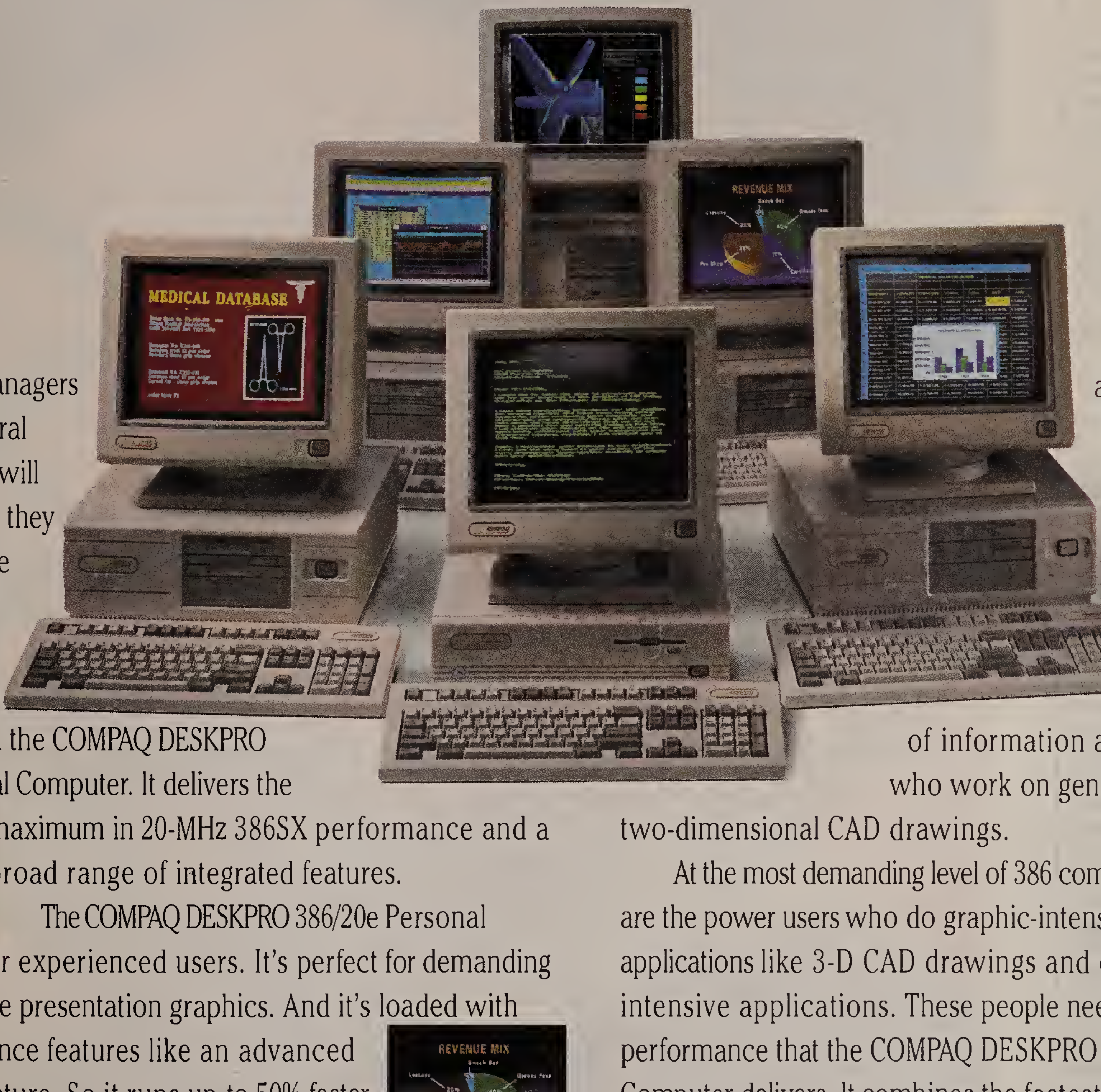

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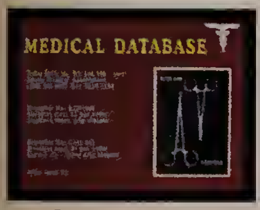

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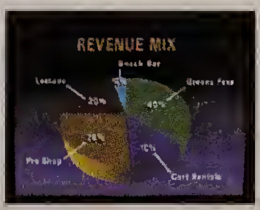

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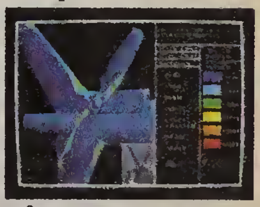

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Carriers take diverse roads

continued from page 1

and high-speed trunk and line interfaces that will enable carrier customers to support switched T-1 services.

It replaces the existing switching matrix in Northern Telecom's DMS-SuperNode central office switches.

Enet, which is in controlled introduction and will be generally available in the third quarter of 1991, breaks an incoming T-1 circuit into 24 64K bit/sec channels for switching, then multiplexes them back into an outgoing T-1, according to Carl Griffith, market development director for Northern Telecom's DMS-100/200 Division.

AT&T's lead

Although AT&T's 4ESS network switches require software modifications and additional hardware, the basic switch architecture can already accommodate switched T-1.

The company is making the necessary changes to support Accunet Switched 384 (a 384K bit/sec service) and Accunet Switched 1536, the switched T-1 service it announced two weeks ago, said Peter Grimard, Accunet Switched 384 and Switched 1536 product manager.

Two-thirds of AT&T's 4ESSs will be modified to support Accunet Switched 384 and 1536 by the end of 1991.

Once equipped to support the services, the 4ESSs will be able to set up a switched 384K bit/sec circuit in less than three seconds and a switched T-1 circuit in a few additional seconds, according to Grimard.

AT&T began much of the upgrade work several years ago as part of its Integrated Services Digital Network development effort, Grimard said. "We've had switched 384 running internally for over two years and switched T-1 in-house for some time."

Although AT&T declined to say if its 4ESS switch can switch data at T-3 speeds, industry sources believe it can, saying they expect the carrier to announce plans for a switched T-3 service in the near future.

MCI has a tougher row to hoe.

Overwhelming user demand and the inability of MCI's Northern Telecom and DSC switches to support switched speeds higher than 64K bit/sec have forced MCI to concoct an interim strategy. Under that plan, MCI will install specially developed software on its DSC digital access and cross-connect systems (DACS) to support switched T-1 and T-3.

Don Heath, vice-president of data marketing for MCI, said the company had little choice. "That's all that was available when we first started looking at offering these services," he said.

User shifts 'tactical' tasks

continued from page 21

what we needed," Pickett said. "We wanted to do that ourselves."

Glaxo will also continue to establish its LAN strategy and architecture, which includes long-term planning and network design, Pickett said.

The strategy of contracting for selected LAN functions has enabled Glaxo to redirect internal staff from tactical functions to technology assessment. For example, Glaxo employees are evaluating Lotus Development Corp.'s Lotus Notes, a groupware application that could provide a competitive advantage.

Such an evaluation would not have been possible if the company had not outsourced other functions. "That is the primary benefit Glaxo is looking to gain," Pickett said.

The final function the company continues to perform in-house is network administration, which includes server backup and user registration. Security concerns are the primary reason Glaxo has not handed these functions over to vendors, Pickett said. "We're not comfortable at this point with divesting ourselves of that."

Pickett advised other users to consider selectively jobbing out LAN functions, rather than outsourcing all LAN operations or keeping all of those operations in-house.

"This approach has been very successful," he said. "Our management has a great deal of confidence in what we've done."

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MCI announced plans to offer switched T-1 and T-3 services in the third quarter of this year.

Heath said user demand for the services has already prompted the company to change its deployment schedules. "We had originally planned to offer the services in 50 cities but will probably increase that to 100 cities."

Although the company will initially offer the service from DSC DACS, Heath said MCI intends to make it available as a switch-based offering in 12 to 18 months to reduce call setup time. "We could cut it from two or three seconds with the DACS to about a half-second with the net switches," Heath said.

MCI is exploring two switch options, including Northern Telecom's Enet system. MCI is testing Enet, but in order to use the system, it would have to upgrade its Northern Telecom DMS-250 net switches to DMS-SuperNodes.

The company is considering installing Adaptive's Synchronous Optical Network (SONET) Transmission Manager (STM) Broadband Network Switch. STM supports switched T-1 and T-3 services and should be available in mid-1991.

"We are looking at Adaptive's STM, which is part DACS and part [network] switch," Heath said. "It's a spectacular box that can support up to 128 switched T-3s." He declined to say when MCI is expected to decide on which product it will implement.

US Sprint may become the first long-distance carrier to implement Enet. Lawrence Lake, senior vice-president of product planning for US Sprint, said the carrier will add the Enet system to its 46 Northern Telecom DMS-SuperNode switches, but he declined to provide start or completion dates for the project.

US Sprint has not yet announced plans for a switched T-1 or T-3 service. The carrier believes its current service offerings will address most users' needs for high-speed switched data services. US Sprint offers a switched option, dubbed NX56, for users that want more than 56K bit/sec of bandwidth. The feature enables US Sprint's Virtual Private Network users to dial up a maximum of eight 56K bit/sec channels to form a 448K bit/sec circuit. Eventually, customers will be able to dial up a maximum of 24 56K bit/sec channels.

A US Sprint source who requested anonymity said the carrier will soon announce NX64, a feature that would enable users to build 1.536M bit/sec T-1s from a 64K bit/sec channel. The feature would be supported on Enet-equipped DMS-SuperNodes.

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continued from page 4

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On the local side, the box supports three types of interface modules, each of which takes one slot. The High Speed Serial Interface (HSSI) module supports a data terminal device at speeds ranging from 300K to 44.2M bit/sec, the full usable bandwidth of a T-3 pipe. Other vendors, including cisco Systems, Inc., are working to adopt HSSI interfaces for their products, which would allow those products to attach to the DL3000's HSSI module, Berry said.

The second module supports as many as four T-1 interfaces, and the third supports up to four selectable-bandwidth V.35 ports.

Berry said Digital Link is also at work on a SONET interface module that would support the Optical Carrier-1 (OC-1) and OC-3 rates of 51.84M and 155.52M bit/sec, respectively.

The DL3000 includes a controller module that provides for control of the unit from an ASCII terminal or from the Digital Link Network Management System.

Functions supported include monitoring T-3 performance, responding to network or customer premises equipment alarms, performing diagnostics and configuring bandwidth options. Direct control and remote access via modem or in-band communications are supported.

The DL3000 is scheduled to ship later this year. Pricing starts at less than $15,000 for a configuration that supports a single T-3 trunk and one HSSI module.

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See The FAXNeT Form on Page 45

Users protest price caps

continued from page 1

Contel Corp. and United Telecom, Inc. voluntarily chose to comply with price caps.

Unless the U.S. Congress steps in and mandates a delay in the implementation of price caps or nixes the plan, the petition for reconsideration is the last chance opponents have with the FCC to prevent price caps from taking effect. The local carriers have already filed rate reductions reflecting a lower rate of return, the first step toward filing price cap tariffs.

If the new regulation goes into effect, opponents' only option will be a court challenge, and some say they are prepared to take that step. An attorney who asked not to be named said he thinks the FCC would lose if the plan is challenged.

"If the FCC steadfastly refuses to make any changes, they're setting themselves up for some appellate trouble," he said.

The agency has already made concessions to opponents by adding features to the plan that it says will benefit customers. The FCC has stated that it won't discard the plan.

Price cap regulation is intended to limit the rates a carrier can charge as opposed to limiting profit levels, which is done under the current rate-of-return system. However, the price cap plan for the local carriers is a hybrid. It caps rates and give carriers increased pricing flexibility but still places a ceiling on profits based on the carriers' rate of return.

If carriers exceed that level, they must share the profits with customers.

But TCA last week said it believes the FCC has grossly underestimated the incentive carriers will have to hike profits by cutting expenditures on network maintenance and upgrades.

"TCA is particularly concerned about the service quality issue because the continued availability of high-quality access services is critical to all members," the association said in its filing. Local carriers can let network quality erode, TCA said, because they face little competition.

Service quality

Additionally, the association expressed doubts about the ability of state and federal regulators to unearth and correct service quality problems. The FCC's resources are already stretched thin and, according to a report compiled for TCA, few states have adequate service monitoring programs.

The study showed that only 10 states actively monitor service quality through inspections, tests or audits, and only 22 states have a formal service quality reporting system for local carriers.

The Ad Hoc Telecommunications Users Committee also expressed reservations about carriers' earnings potential under price caps. The group is concerned that users will pay too much for service because the FCC has set its goals too low. The price cap formula requires carriers to hold future price increases to a specific percentage, referred to as a productivity factor, below inflation.

The productivity factor originally proposed was 3%, but in a revised order, the FCC said the factor should be at least 3.3%. The agency also included an option for carriers to use a productivity factor of 4.3% and keep more profits.

ICA, which has also pressed the FCC for a higher productivity factor, agreed that the revised factors are too low and charged that the FCC did not examine the issue carefully.

"Clearly, the second track [productivity] option is a last minute attempt by the FCC to split the difference in a manner that has been inadequately analyzed," ICA stated in its filing.

The Ad Hoc committee is also concerned with how the FCC will monitor carrier earnings. The agency is apparently set to monitor earnings on an aggregated basis rather than by individual services.

"Without monitoring earnings data at the service level, it's going to be impossible for the commission to know whether rates for a particular service are just and reasonable," said James Blaszak, counsel for the Ad Hoc committee.

Additionally, both the Ad Hoc committee and ICA expressed doubt that the FCC's profit-sharing mechanism will benefit users. "The mere existence of an earnings sharing plan is no guarantee that ratepayers will participate in shared earnings," ICA said. There is no guarantee that carrier profits will reach the level at which the sharing mechanism is triggered.

Net vision takes shape at Boeing

continued from page 1

finalized an architecture last December that calls for a common backbone network linking processors outfitted with standard OSI applications on IBM Systems Network Architecture nets, Digital Equipment Corp. DECnets, Hewlett-Packard Co. nets and a host of proprietary engineering local-area networks.

Rigsbee said Boeing's studies identified four areas of connectivity that the company needed to address: connectivity within a building, campus connectivity, intercampus connectivity and interregional connectivity.

Within a single building, Boeing will install 100M bit/sec Fiber Distributed Data Interface nets to link proprietary nets.

Computers on the FDDI backbones will support a variety of OSI applications, such as X.400 E-mail, X.500 directory services and File Transfer, Access and Management (FTAM) software, enabling any workstation user to access any host.

Rigsbee said the company began installing FDDI networks in buildings earlier this month at the company's Renton, Wash., aircraft manufacturing plant.

Network personnel there began linking disparate LANs supporting computer-aided design and computer-aided engineering applications by tying them into FDDI nets. Rigsbee declined to name the FDDI vendors with which Boeing is working but emphasized that the company had specifically chosen two vendors in order to maintain competition for FDDI products.

Boeing's FDDI networks within a campus environment will be interconnected by an FDDI backbone, which will route X.400 messages and FTAM file transfers among the different buildings.

The FDDI networks in each building will be star-wired to a campus FDDI hub. Dual FDDI concentrators in the hub will provide redundancy in the event of a primary ring failure.

Traffic destined for other campuses will be passed to a router on the campus backbone that will be linked to a variety of public and private network services.

On an intercampus basis, several campus backbones will be linked via 64K bit/sec and T-1 public and private services into a regional net so they can be managed from a central site.

Regional networks will be linked by T-1 lines. In the long term, the company hopes to migrate wide-area network traffic to T-3 and multigigabit speeds supported by the Synchronous Optical Network (SONET) standard.

Boeing initially plans to link regional nets at its Seattle, Wichita, Kan., and Huntsville, Ala., sites. Two other regional sites in Philadelphia and Vienna, Va., will eventually be added to the interregional network.

Boeing has determined that an 80/20 rule exists regarding the need to transfer data across the four designated network areas, Rigsbee said. "About 80% of the data existing in a local-area network needs to get up to a backbone net," he said.

The firm's current inability to share information has meant wasteful duplication of data entry, Bride said. And the lack of cross-departmental communications creates problems in dealing with the subcontractors to which Boeing typically farms out as much as 60% of its aircraft production.

DEC offering helps banks

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will see us trying to accommodate almost any request."

DEC started developing DEC-bank-Branch when it won a contract to help Chemical Bank of New York build a platform automation network ("Bank wields net weapons," *NW,* Sept. 28, 1987).

The vendor refined its software when it began working with Ameritrust last year.

Russell said DEC will also provide custom APIs to enable DEC-bank-Branch applications to work with a bank's existing hardware, thus preserving the bank's investment in such specialized equipment as teller terminals, passbook printers and bank account statement printers.

For instance, DEC teamed with both Ameritrust and Ericsson to enable Ericsson teller terminals used in Ameritrust branches to communicate via a DEC VAXserver 3100 with an IBM mainframe.

DEC said it will provide DEC-bank-Branch software, consulting services and DEC hardware under custom contracts priced according to the number of branches in the network. The offerings are available now.

Alumni group issues RFP

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"We designed this RFP package to offer all our alumni a broad range of high-quality long-distance services at a more competitive cost than they might be able to get on their own," said John Kobara, executive director of the University of California at Los Angeles' alumni association and head of the CAAE Telecommunications Committee. "At the same time, we're providing our CAAE member institutions with the means to raise additional contributions."

Among CAAE's 101 member schools are some of the nation's largest universities, including the Georgia Institute of Technology, Ohio State University, Rutgers University, Texas A&M University, the University of Colorado and the University of Michigan.

In August, the CAAE Telecommunications Committee surveyed its membership to see if there was interest in a bulk service plan. "More than 80 percent of the members expressed a strong interest," Kobara said.

The CAAE has asked the carriers to submit proposals by Dec. 15. The Telecommunications Committee will evaluate them and recommend a carrier to the board of directors in February.

"We are looking for a marketing partner, not just a long-distance provider," Kobara said. The RFP asked vendors to outline marketing programs that would sell the long-distance program directly to the alumni. There are also hopes to devise university-specific marketing campaigns that use the discounted calling services.

Kobara and his counterparts at other schools said they hope alumni will give part or all of the savings to their alma mater.

"Duke [University] definitely sees this as a means to augment our existing alumni [fund-raising]," said Jac Chambers, director of marketing for Duke's alumni association and vice-chairman of the CAAE Telecommunications Committee.

Chambers said Duke already offers alumni a Duke MasterCard, from which the university receives royalty payments based on customer usage.

One of the offerings requested in the RFP is for 700 numbers alumni can use to access audiotex programs created by universities. "It's possible that our alumni may be able to dial a 700 number to get information on collegiate events, basketball games and postgraduate educational programs." Chambers said.

Daniel Briere, president of TeleChoice, Inc., a Montclair, N.J. consultancy, contributed to this article.

NETWORK WORLD

161 Worcester Road
Framingham, Mass. 01701-9172
(508) 875-6400

Second-class postage paid at Framingham, Mass., and additional mailing offices. *Network World* (USPS 735-730) is published weekly, except for a single combined issue for the last week in December and the first week in January by Network World, Inc., 161 Worcester Road, Framingham, Mass. 01701-9172.

To apply for a free subscription, complete and sign the qualification card in this issue or write *Network World* at the address below. No subscriptions accepted without complete identification of subscriber's name, job function, company or organization. Based on information supplied, the publisher reserves the right to reject non-qualified requests. Subscriptions: 1-508-820-7444.

Non-qualified subscribers: $3.00 a copy; U.S. — $95 a year; Canada, Central & South America — $110 a year; Europe — $165 a year, all other countries — $245 a year (airmail service). Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Please include mailing label appearing on front cover of the publication.

Network World can be purchased on 35mm microfilm through University Microfilm Int., Periodical Entry Dept., 300 Zebb Road, Ann Arbor, Mich. 48106.

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POSTMASTER: Send Change of Address to *Network World,* 161 Worcester Road, Framingham, Mass. 01701-9172.

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Net execs face credibility gap

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Dale Browning, president and chief executive officer of Colorado National Bank in Denver.

Consultants concede, however, that net managers at many of the largest U.S. firms already enjoy the respect of senior executives and are considered critical players in helping their firms chart strategic direction. These companies usually rely heavily on information technology to support or deliver their products and services, and recognize its strategic value.

While credibility isn't built overnight, most consultants say network managers should start by establishing sound financial controls. This means keeping an accurate inventory of all equipment and determining in minute detail all network-related costs, including expenses for staff, facilities, equipment and network usage (see "Cost-conscious managers gain credibility," this page). Armed with this knowledge, network managers can better optimize network operations and control the growth of network expenditures.

They can then present this information to senior executives in a master plan forecasting network requirements and expenditures for the next three to five years, taking into consideration the firm's strategic plan and the current direction of the industry.

"The master plan impresses senior executives, [shows] that you have control over the expenses of one of the largest line items in the corporate budget and is the springboard for further dialogue with upper management," said Richard Kuehn, president of RAK Associates in Cleveland.

The Travelers Corp., for example, developed an in-house data base to keep an accurate and detailed inventory of all network equipment and circuits. This inventory, which is updated daily to reflect moves, adds and changes, enables the firm's network group to track monthly costs and optimize the network.

"We have a passion for detail," said Gus Bender, second vice-president in the telecommunications division at Travelers. "We have detailed knowledge of our entire network, from manhole to manhole. You can't manage a network unless you have an accurate and detailed inventory."

Some net managers are too busy putting out fires to maintain an accurate inventory and track recurring and nonrecurring network costs. Others are hampered by their company's decentralized operating structure and broad geographic presence.

"Controlling costs is the most significant task a network manager has, but the most formidable and overlooked," said Jerry McDowell, vice-president of communications consulting and director of education services at the META Group in Carmel, Calif. "Many network managers claim they know what it costs to run their company's network, but few really do."

Ideally, network managers should know the cost per minute of running the corporate network, taking into account leased line, trunking and other usage costs, as well as such overhead items as labor, equipment maintenance, depreciation and office space.

Companies that are considering AT&T Tariff 12 deals need to make a more thorough assessment of their network so they have a benchmark against which to compare vendor bids, Kuehn said. These companies need to track usage costs between locations and by time of day and type of service.

"It's the management of minutiae," Kuehn said. He suggests that net managers develop or purchase network management tools that automate such processes as tracking inventory, usage and maintenance costs.

However, these tools are expensive, and many companies are unwilling to allocate additional funds to network departments that don't have a good track record of containing costs, Kuehn said.

Getting control of network costs is only one obstacle network managers must overcome to improve credibility. A larger problem is loyalty.

"Network managers need to demonstrate that their allegiance is to their company, not to technology," said James Jewett, cofounder of Telco Research Corp., in a recent interview with *Network World* ("Net strategist offers insights to managers," *NW,* Oct. 8).

Jewett said managers should learn the business of their company, even if that means selling insurance, or working as a bank teller or on the loading dock. They also need to know why customers buy their company's products rather than the competition's and how network products and services could garner greater market share.

"Few network managers know these things," Jewett said.

The META Group's McDowell said network managers need to speak the language of business rather than technology. They need to learn how to make effective business presentations, dress like top executives and present the benefits of technology in business rather than technical terms.

For example, network managers could document how deployment of a new technology can lower costs per unit of production and then translate that into estimates of market share gain, increased profitability or whatever measure the company emphasizes, McDowell said.

Fidelity builds TCP/IP backbone

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er, Inc. fault-tolerant processors collect news and market data from outside sources and turn it into Fidelity-specific information. Different groups within Fidelity manipulate that data using applications that run on various computers, including Sun Microsystems, Inc. Unix workstations and servers, Digital Equipment Corp. VAXes or personal computer local-area networks.

A spattering of IBM Application System/400 and System/38 minicomputers also exists in various Fidelity groups.

"Our environment is primarily wires between things, and what we're trying to get to is intelligent platforms with a server/requester architecture," Diasparra said.

Long term, the company wants to evolve to an architecture where multiple servers will provide specific services for workstations. For example, the company is developing an IBM Advanced Program-to-Program Communications server that would take data requests from workstations and, using IBM's LU 6.2 protocol, retrieve the data from wherever it resides.

Overall, the idea is to give any user access to any host, then to simplify the communications between the two, Maybaum said.

The company embarked on the TCP/IP backbone project about a year ago. Following an exhaustive equipment selection process, the first production users of the backbone, the Fund Accounting Customer Services organization, came on-line earlier this month.

That group was chosen because it was using a new accounting and financial processing application anchored by a DEC VAXcluster, a first for Fidelity. But the group needed to access or send data to nearly all the company's computing platforms.

"If they did it all with DECnet, then we were going to have yet another new network that would have to fit into our existing environment," Diasparra said.

Vendors such as DEC and IBM were quick to point out that they would eventually be able to provide connectivity to multiple vendors' platforms using Open Systems Interconnection protocols, he added. But Fidelity was impatient.

> "What we're trying to get to is intelligent platforms with a server/requester architecture," Diasparra said.

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"The freight train is moving," Diasparra said. "We chose not to wait."

The structure

To build FDDN, the company decided to standardize on Cabletron Systems, Inc. intelligent wiring hubs, 3Com Corp. 10baseT adapter cards, cisco Systems, Inc. routers and Mitek Systems Corp. gateways for IBM 3270, 5250 and LU 6.2 connectivity.

The company will use those products whenever possible to provide multihost connectivity, such as when building a net from scratch or retrofitting an existing facility to link to FDDN.

IBM Personal System/2 computers will be linked to Cabletron hubs using the 10BaseT adapters and twisted-pair wire. The hubs, in turn, will link to the cisco Systems routers, which will provide the connection to the FDDN backbone. The backbone is carved out of capacity on Fidelity's existing T-1 network and extends to each of the company's hosts.

Mitek gateways, which access IBM hosts, will be placed either on the same LAN as the routers or at the data center, depending on the application.

The gateways are only a tactical solution though; Fidelity hopes to eventually support TCP/IP in native mode on all its hosts if new versions of IBM TCP/IP software for MVS and the AS/400 solve the performance problems of earlier versions, Diasparra said.

The investment firm has targeted as primary FDDN hubs two locations here — one in a major data center and the other in a major telephone operations center — as well as a third at its Dallas computer center. Each site will be designed for full redundancy using two of cisco System's high-end AGS+ routers. Subnetworks will feed into the backplane of each router and, if one router fails, the other can take its load.

At other sites, smaller versions of the AGS line will be used, depending on the requirements for each site.

As for managing its new net, Fidelity is currently using Hewlett-Packard Co.'s Simple Network Management Protocol management system than runs on an HP 9000 minicomputer. Eventually, the firm hopes to tie that system to IBM's NetView.

Cost-conscious managers gain credibility

Network managers who have a good handle on network expenditures can increase their credibility in the eyes of senior management.

But tracking monthly costs in a large, decentralized corporation is a monumental task that is hard to master, according to David Dorff, a principal at Deloitte & Touche, a consulting firm in Cincinnati.

However, Dorff says much of the data needed to track costs in decentralized corporations, in which each division has its own buying responsibilities, can be obtained from the controller's office. You simply have to know where to look.

Dorff divides network costs into four categories: usage charges, equipment, facilities and staff.

In decentralized companies with many independent network departments, usage charges or billing information can be obtained from the corporate chart of accounts, which is tied into the company's central billing system.

> "Managers who are able to harness their purchasing power will be industry leaders."

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Network managers can obtain a printout of communications bill summaries by giving the controller a list of major network vendors.

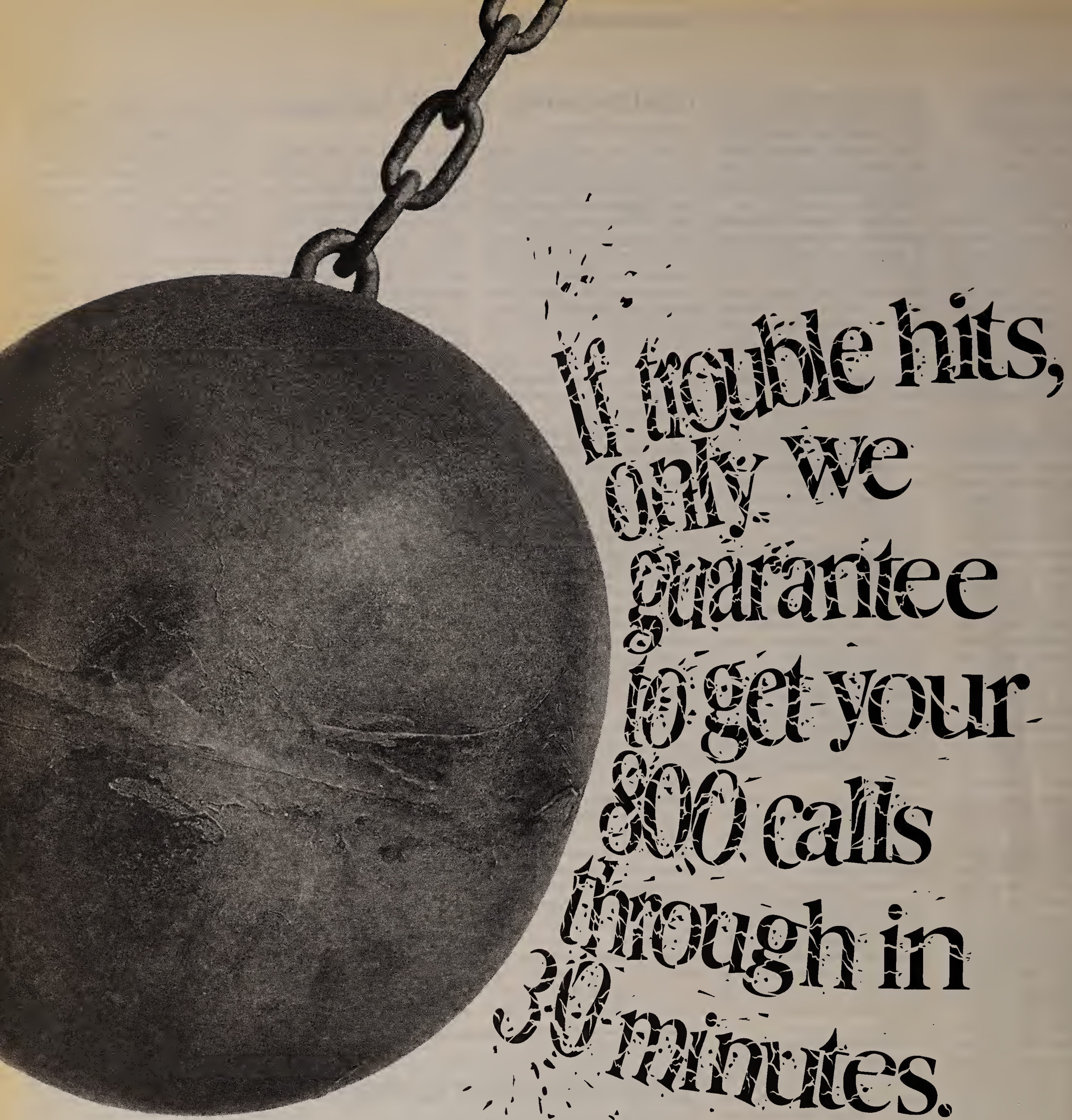
The controller can then pull charges associated with those vendors from the accounts payable system.

Dorff suggests that network managers then ask the carriers on the controller's printout to provide billing summaries by location and service so that they can be cross-checked with results from the corporate accounting office.

If expenditures for facilities, staff and equipment are not available at the comptroller's office, net managers will have to visit the firm's sites to determine what resources are being used to support network services, Dorff said.

"Network managers who are able to proactively capture costs and harness their purchasing power will be the industry leaders in the year 2000," Dorff said.

— *Wayne Eckerson*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